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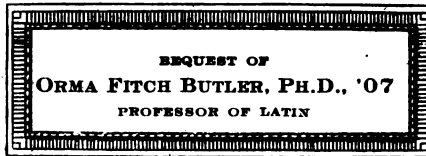
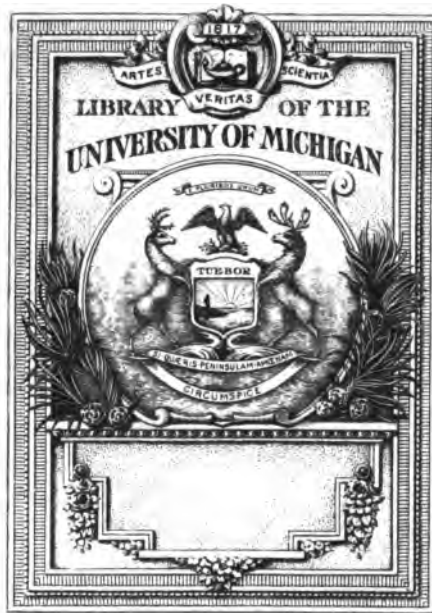
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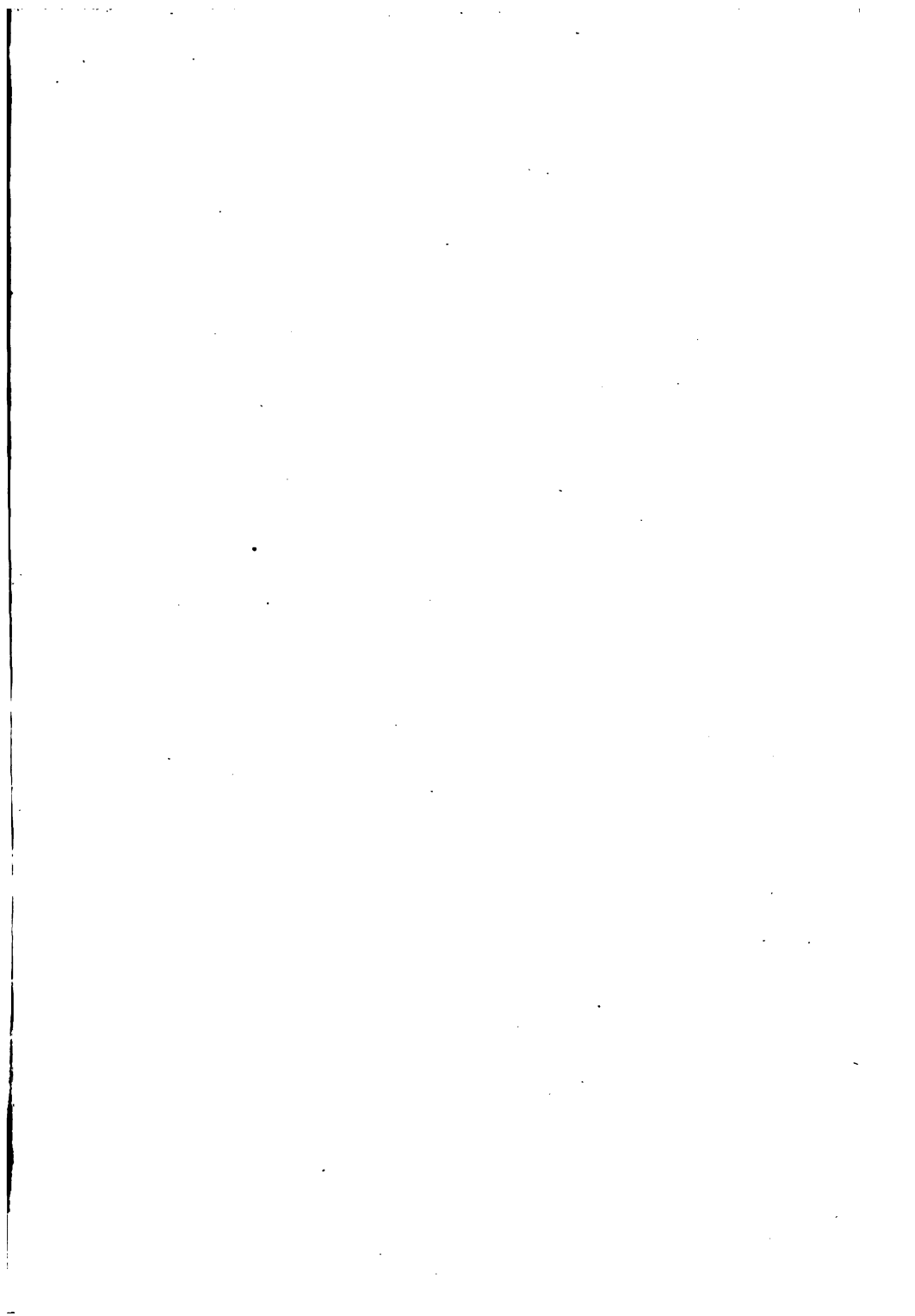
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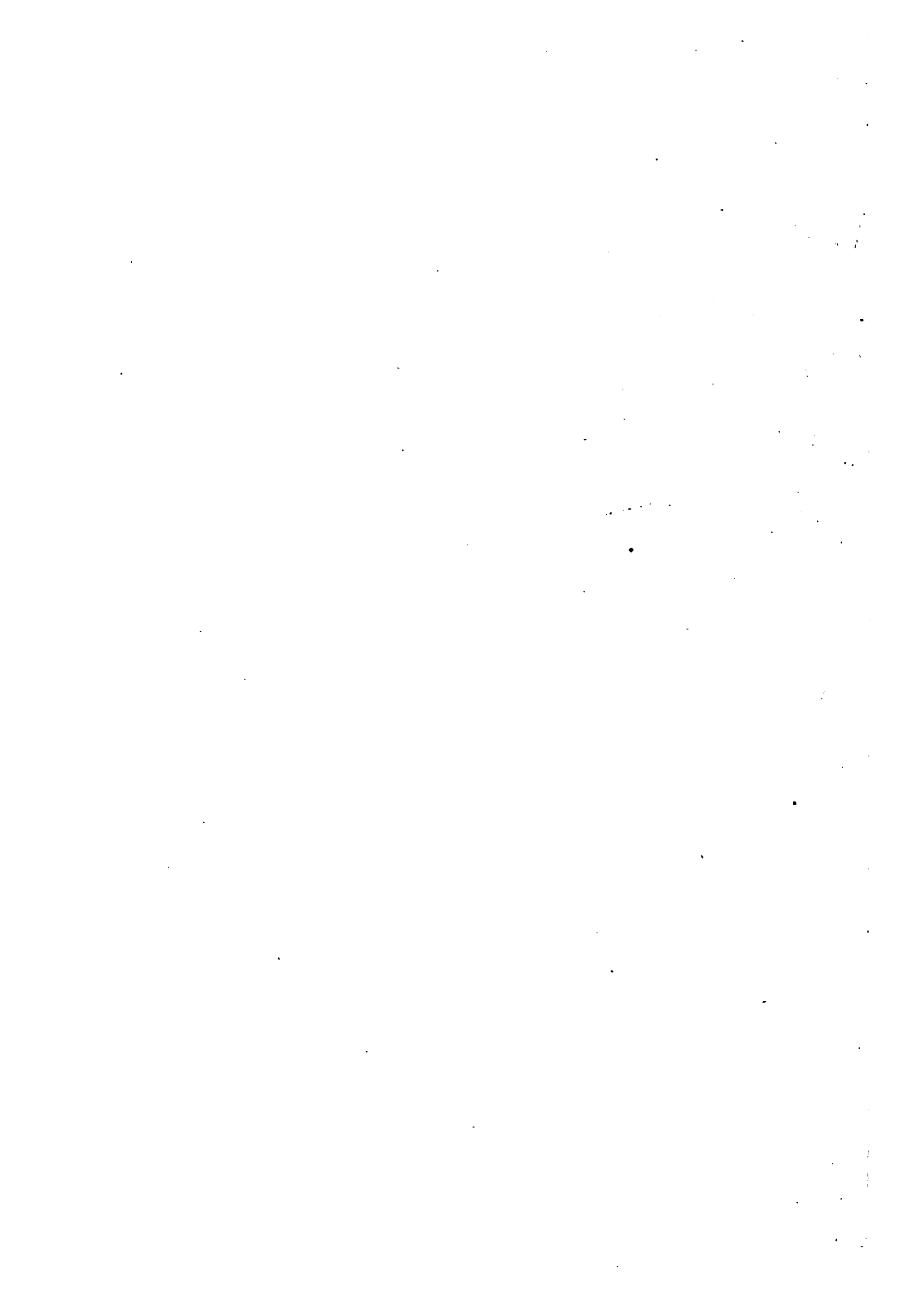
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Elements of Notation and Harmony

WITH FIFTY-EIGHT EXERCISES

FOR USE IN PUBLIC INSTITUTIONS OF LEARNING AND FOR
SELF-INSTRUCTION

BY

LUDWIG BUSSLER

Translated from the Fifth revised and enlarged Edition

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Preface to the Fifth Edition.

THE following compilation of the musical elements was prompted by the need of a book, which should contain not only the necessary definitions, rules, and explanatory examples, but likewise (and chiefly) a sufficient number of exercises in the needful material of repetition, thus enabling the pupil to fix and supplement, through private application, what he had learned in the lessons. These exercises therefore form an integral part of the work, and render the same peculiarly adapted for self-instruction.

No one desiring to make music intelligently can skip these exercises, especially where they have to do with scales and intervals.

The arrangement of the course of study is such, as its oral presentation in the elementary classes in theory of a musical seminary appears to demand.

VIII

It is taken for granted, that a practical course of singing, or of instrumental playing, either has preceded or will accompany the present course.

It has been the author's endeavor, strictly to observe the limits dividing elementary instruction from the sciences of composition and music.

The alterations in, and additions to, this fifth edition were suggested by the author's uninterrupted work as teacher, and his observation of numerous pupils.

The Author.

Elements of Theory.

I.

Introduction. Learning the Notes.

High and Low Tones.

§ 1. The difference between high and low tones should be illustrated during private teaching by playing or singing to the pupil. — At the piano the higher tones lie to the right, as the player sits, of the lower ones, the lower tones to the left of the higher.

Root-names.—Root-tones.—The Octave.

§ 2. Those names of tones, from which all others are derived, are called Root-names. They are seven in number. They are called *upwards* (i. e. progressing from lower to higher tones): *c, d, e, f, g, a, b*; *downwards* (i. e. progressing from higher to lower tones): *b, a, g, f, e, d, c*. These names are repeated upwards to the highest tones, downwards to the lowest, in like succession. *E. g.* upwards: *c, d, e, f, g, a, b, c, d, e, f*, etc.; downwards: *c, b, a, g, f, e, d, c, b, a, g, f*, etc.

EXERCISE I. Write successions of root-names, upwards and downwards, beginning at will with any root-name, and progressing to the next repetition; *e. g.* upwards: *a, b, c, d, e, f, g, a*; downwards: *a, g, f, e, d, c, b, a*.

Write successions of root-names, skipping every other root-name upward or downward, till reaching the one begun with. *E. g.*: *e, g, b, d, f, a, c, e*; downwards: *e, c, a, f, d, b, g, e*. Thus, in the first series, *e* is skipped between *d* and *f*, *a* between *g* and *b*, etc.

Write similar successions, skipping 2, 3, 4 or 5 root-names. *E. g.*: *c, f, b, e, a, d, g, c*. Here two root-names are skipped every time, *d e* between *c* and *f*; *g a* between *f* and *b*, etc.

§ 3. The tones designated by the root-names are called *root-tones*.

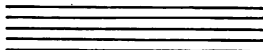
The interval (distance) from a root-tone to its next repetition is called an *Octave*.

Notes.—Clefs.

§ 4. The written signs for the tones are called *Notes*.

Notes are written *on, between, above and below* five parallel lines, which together form the *Staff*:








1.



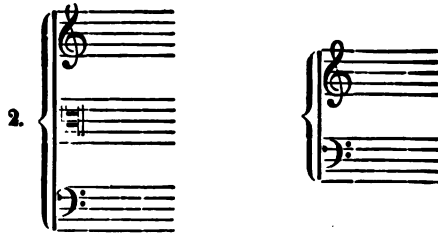
§ 5. NOTE. Distinction between Note, Tone, and Key: we *read* the note, *strike* the key, and *hear* the tone.

By the notes upon *one* staff only a part of the whole range of tones (which comprises 7 to 8 octaves) can be shown in a distinct and easily recognizable manner. Now, in order to indicate *which* part of the whole tone-range shall be presented by the notes of one staff, certain signs are used, which are set at the head of each staff, and called *Clefs*.

Three different clefs are in general use:

- (1) The Violin Clef  for medium, high, and highest tones;
- (2) The Bass Clef  for medium, low, and lowest tones;
- (3) The C-clef (variously written , , , , ) used only for medium tones.

To present the entire tone-range, or a great part of the same, two or more staves with different clefs must be employed simultaneously. In this case the staves are joined by a *Brace*.



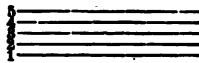
(Pianoforte music requires two staves for this purpose.)

NOTE. It depends upon the aim of instruction in each individual case, how many of these clefs the pupil shall be drilled in. For pianoforte players, a knowledge of the violin and bass clefs suffices; for soprano singers the violin and soprano clefs; for altos the violin, soprano, and alto clefs; for tenors the violin, tenor, and bass clefs; for basses the violin and bass clefs. Composers and conductors must know all the clefs.

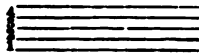
§ 6. The naming of the notes depends upon:



- (1) the clef set before them,
- (2) their position on, above, or below the staff.





The lines of the staff are counted from below upwards, the lowest thus being called the first, the highest the fifth.



Between the five lines four Spaces are found:



That part of a note showing its position on the staff, and giving it its name according to pitch, is called the *Head*, and is either black  or white .

The line proceeding either upward from the right, or downward from the left side of the head, is called the *Tail* or *Stem*    . Certain notes have none.

The short lines sometimes written above or below the staff, parallel to the lines of the latter, are called Ledger Lines; the notes are written either upon or between them:



§ 7. Reading music. We say of a clef that it is on a line, when it makes this line in any way prominent. The violin clef surrounds the second line by its first flourish.

Notes of the Violin Clef.





The violin clef is also called the G-clef, having been formerly written as a G, and gives that name to the line on which it stands.

Notes of the Bass Clef



The bass clef is also called the F-clef, as it was formerly written as an F, and gives that name to the line on which it stands, as marked by the initial point and the two dots.

The  is used for many instruments, and also for female (children's) and male voices, especially for the tenors. The latter sing the notes an octave lower than they (according to the table below) are written. The  is used for many instruments, and for male voices.

Formerly the F and G-clefs, like the C-clef down to the present, were written on various lines.

The C-clef is used on three different lines:

- (1) As Soprano clef, for a high female or child's voice, on the first line.



- (2) As Alto clef for a low female or a child's voice and certain instruments, on the third line.



- (3) As tenor clef, for a high male voice and certain instruments, on the fourth line.*



Musical notation shows the mutual relations of the notes with reference to pitch by their position, so that in the same clef a note *placed higher* represents a *higher* tone, one *placed lower* a *lower* tone. (Exceptions later.)

The whole range of tones used in music is divided into octaves from one *C* to another, which octaves are named Contra-octave, Great or First octave, Small or Second octave, etc., as shown in Table, page 7. Alphabetically, the tones of the great octave are written in capital letters, as in lowest line of the Table, the small octave in small letters, the higher octaves in small letters with one

* Formerly the C-clef was also used on the second line as mezzo-soprano clef.

or more points to the right (c' , c'' , c''' , etc.), one or more lines above (\bar{c} , $\bar{\bar{c}}$, $\bar{\bar{\bar{c}}}$, etc.), or with small figures (c^1 , c^2 , c^3 , etc.). For the contra-octave and double contra-octave these marks are placed below the capitals \underline{C} , $\underline{\underline{C}}$, $C_{\text{,,}}$, $C_{\text{,,,}}$, $C_{\text{,}}$, $C_{\text{,}}$, etc.). The position of the individual tones in the entire range can thus be precisely designated; we say double contra- C ; contra- C ; great C ; small C ; middle (or one-lined, or once-accented) c ; two-lined (twice-accented) c ; three-lined (thrice-accented) c , etc.

Where clef and staff change together, at beginning of a new line, the new clef must be set, not only at the head of the new staff, but at the end of the old one.

§ 8. To avoid too many ledger lines *above* the staff, the highest notes are usually written an octave lower, and the sign $8^{\text{~~~~~}}$ or $8^{\text{va~~~~~}}$ (all' ottava) set above them, which shows that the notes are to be executed an octave higher. The wavy line $~~~~~$ is continued until the notes are again to be executed as written, where it stops with a line drawn downward $~~~~~\downarrow$ or at the word *loco* (= place, i. e. pitch as written).

To avoid too many ledger lines *under* the staff, the lowest notes are written an octave higher, and the same sign, adding the word *bassa*, thus: 8 or $8^{\text{va bassa~~~~~}}$ (low octave), is set beneath, showing that the notes are to be executed an octave lower. At the end the line is drawn upwards, or the word *loco* written.



Instead of a wavy line a dotted line sometimes occurs.


§ 9. The notes are not all to be read at one sitting, but gradually to be practiced after the sections of the following exercise till great fluency is attained, at the same time proceeding further.

EXERCISE 2. Read the following notes in each of the clefs to be learned.



The following lines are to be read only in the Bass and Violin clefs.

10




11



12




13




14



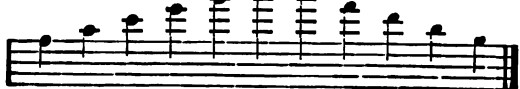
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17



REMARK. The *position* of the note as a sign of *pitch* being fixed by the lines and ledger lines, and the spaces between them, and the stepwise progression of the tones as written therefore alternating continually between lines and spaces (while two adjoining lines or spaces always skip one degree), it is consequently easy to calculate all notes in any clef from one given note. But, as the notes should be *memorized*, a premature pointing out of this easy aid to calculation (which many beginners hit upon themselves) is not advisable. The pupil, trusting to this aid, would be too apt to avoid the effort of memory, and would in consequence never attain proper fluency in reading music.* Still, on account of the rarely occurring and therefore easily forgotten highest and lowest tones, and likewise as a clew to strange clefs in case of need, we call the attention of those already practiced in reading to this expedient.**

The Notes.—The Dot.—The Triplet.

§ 10. The value (duration) of tones is indicated by the shape of the notes. Those kinds of notes occurring


* Like children who, never having learned the multiplication table so thoroughly that they need not stop to think when using it, are never able to reckon quickly and correctly.


** The ledger lines and their spaces are thus an extension of the staff, to be counted down and up with the same, the lines above the staff as its upward extension, those below as its downward extension. Herefrom results an accessory exercise promotive of insight into the system of notation, *i. e.* the naming of lines or spaces taken at random, one line or space being given. *E. g.* given, third line (*f*). *Q.:* Name the note on the second line above staff. *Ans.:* *g.*—*Q.:* Name the five lines. *Ans.:* *b-d-f-a-c.*—*Q.:* Name the note below the second line under the staff. *Ans.:* *d.*—*Q.:* Name the four spaces, etc.—We have, moreover, the result, that the bass and violin clefs together form an extended or Grand Staff of eleven lines, from which the middle line (*c*¹) is dropped for the sake of clearness.—It is wrong to write the ledger lines slantingly, because their significance as a continuation of the staff loses in perspicuity thereby.


most frequently are whole, half, quarter, eighth, and sixteenth-notes.

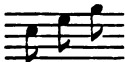

A Whole Note consists of a (so-called) *white* head.

A Half-note consists of a *white* head and a tail. 

A Quarter-note consists of a *black* head and a tail. 

An Eighth-note consists of a *black* head, a tail, and one hook at the end of the tail. 

A Sixteenth-note consists of a *black* head, a tail, and two hooks at the end of the tail.  Where several notes having hooks follow each other, their tails are united by a stroke or strokes (stroked together) inclining in direction from the first to the last note.

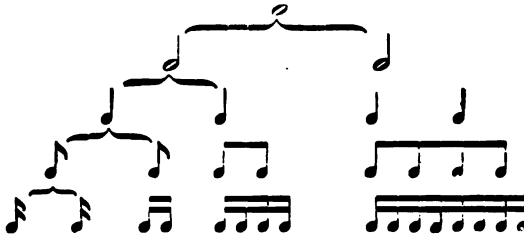
Instead of  we write 

Instead of  we write 

How many notes are thus to be connected, depends upon the division of the measure (see Section IV). In vocal score only those notes belonging to one syllable are united.

The relation of the notes through their shape to the length of tones is called their *value*.

Table of Note-values.

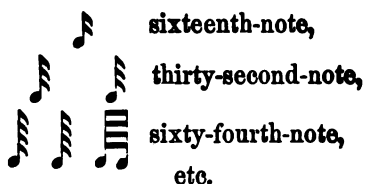



Following in the above only the notes joined by braces, we clearly perceive that



One Whole note	=	two Half-notes,
" Half-note	=	" Quarters,
" Quarter-note	=	" Eighths,
" Eighth-note	=	" Sixteenths.


§ 11. Notes representing a longer duration are said to be of *higher value* than those representing a shorter duration, and termed notes of *lower value*. *E. g.* half-notes have a higher value than quarters, but a lower value than whole notes.

§ 12. There are likewise notes representing a still shorter duration than sixteenths; these, like those in the table, are so ordered, that each shorter note of the series has half the length of the one preceding. Thus the notes next after the sixteenth in value are the thirty-seconds, followed by the sixty-fourths, etc. Each such note is distinguished from the series above by the addition of a hook to its tail.









When the hooks of a group of notes are stroked together (comp. § 10), any hooks not so united also take the form of short strokes  etc.

§ 13. There is yet another note, though seldom used, which has double the value of a whole note, namely the Breve (nota brevis)  or ; it occurs frequently in ancient music, and sometimes in modern, especially church-music.







§ 14. All kinds of notes being divisible by 2, it follows that other than double values must be represented by combined notes. Notes are combined by a tie  passing from head to head. Notes of like pitch, connected by ties, represent a single tone of the value of all the notes so joined. The tone in question is therefore to be held (*i. e.* not sounded or struck again) as long as the combined value of all the connected notes requires.



§ 15. A Dot after a note (*e. g.* ) prolongs its value by half. The dotted note is an abbreviation of the most common combination of notes to tone-values divisible by 3.

 (8/1)
 (8/2)
 (8/4)
 (8/8)
 (8/16)
 etc.

When the first dot is followed by a second, the latter adds, to the total tone-value, half the value of the first dot.

 =  (7/4)
 =  (7/8)
 =  (7/16)

The second dot has, therefore, half the value of the first.

Each following dot adds, to the total tone-value, half that of the preceding dot.

$\bullet \dots = \bullet$ ($\frac{15}{8}$)
 $\bullet \dots = \bullet$ ($\frac{31}{32}$)

Each successive dot has, therefore, half the value of the one just before.

It follows, that the total value of the dots after a note equals the value of the note itself minus that of the last

dot, the value of note and dots combined being equal to double that of the note, less the value of the last dot.

More than three dots are not used.

EXERCISE 3. Read the following notes, naming their values.



Dotted notes, especially in written solutions of this Exercise, should first be changed into tied notes, *e. g.* $\text{c} \dots$ — whole, half, quarter ($\text{c} \text{---} \text{c} \text{---} \text{c}$) — $1\frac{1}{2}$ or $\frac{3}{4}$.

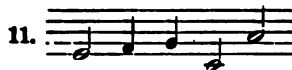
EXERCISE 4. Write note-values corresponding to the following: $\frac{2}{1}$, $\frac{3}{32}$, $\frac{7}{64}$, $\frac{3}{2}$, $\frac{15}{16}$, $\frac{15}{32}$, $\frac{163}{64}$, $3\frac{1}{2}$, $\frac{21}{32}$, $\frac{7}{16}$, at first in tied notes, and then where practicable by setting from one to three dots after the last note.

REMARK. The writing and copying of notes being a valuable aid in learning to read music, we append the chief rules for correct notation.

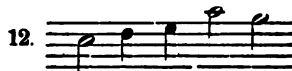
- (1) The pen is to be held parallel to the staff-lines. It thus rests on the tip of the middle finger towards

the forefinger, near the nail. All pressure is exerted by the thumb, from above, upon the pen-holder. The forefinger operates against the pressure of the thumb; the ring and little fingers serve as a rest for the hand.

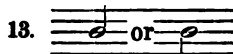
- (2) The black heads of the notes are always formed by a single strong pressure of the thumb, the white notes by two strokes, thus ' , = o. The tails are always commenced at the top. Quarters and Halves are written $\overset{1}{\bullet} \overset{2}{\bullet} = \text{♩}$, $\overset{1}{\bullet} \overset{2}{\bullet} \overset{3}{\bullet} = \text{♪}$.
 (3) The notes below the third line have their tails to the right and turned upward:



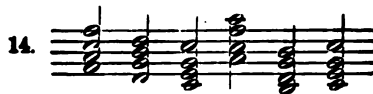
The notes above the third line have their tails to the left and turned downwards:



Notes on the third line may have their tails either turned up on the right or turned down on the left.



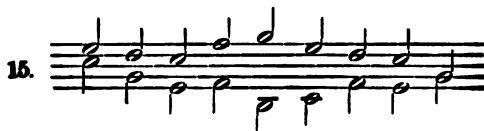
- (4) Several notes to be struck together, on the same staff, have one tail in common.* The place of the tail is decided by the majority of notes, or those farthest from the third line.**



* Notes sounded simultaneously are written one *above* the other, those sounded successively are set one *after* the other.

** Note-heads as printed are slanting, as written horizontal. The conditions for print and handwriting are essentially different, as the printed notes lack the individuality of written ones.

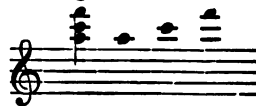
- (5) When two notes to be sounded together must be clearly distinguished, on one staff, as belonging to two different parts, the note in the higher part has its tail turned up, that in the lower its tail turned down.



The last note belongs to both parts.

- (6) The Violin clef is not begun at the lowest point, but with the scroll of the G-line.—The Bass clef is begun on the F-line.—Ties are placed commonly on the head side.—The hooks of the smaller notes are always turned to the right and towards the head of the note.
- (7) When, in a long series of notes, especially smaller ones, a particular direction of the tails predominates, the same is applied to *all* the notes, as continual change of direction in such figures confuses the eye and impedes reading.
- (8) As ledger lines show the distance of the note from the staff, they cannot be further removed from the latter than is the note itself. *Above* the staff there are therefore no ledger lines *over* notes, and *below* the staff no ledger lines *under* notes. Pupils often blunder in this. Ledger lines being counted like staff-lines (p. 10, note 2), each ledger line counts

for all notes above it. In



for instance, the line through the head of *a''* counts also under *c'''*, and the lines through *a''* and *c'''* count under *f'''*. In this regard not only beginners make mistakes, by giving to each note its peculiar lines; as in our example, for *a''* one line, for *c'''*

two more above, for f''' three more above that



thus writing a'' , e''' , e''' instead of a'' , c''' , f''' .

§ 16. By using the dot, notes of higher value are formed, equal in length to three notes of the next lower value.



However, it sometimes happens that one is obliged, without being able to employ a dot, to form notes of lower value, three of which must equal one note of higher value. In this case we take three notes of the kind next in value below the larger note, and set over or under them a slanting 3. *E. g.*, if we are to write three notes of like value, and together equal in value to a half-note, we employ three quarter-notes, marking them with a slanting 3.



Such groups are called Triplets. Thus $\text{half-note} = \text{quarter-note} \text{ triplet}$, $\text{quarter-note} = \text{eighth-note triplet}$, etc. Two triplet-notes may also be combined as one note of higher value: $\text{quarter-note} = \text{eighth-note triplet}$ or $\text{eighth-note triplet}$; $\text{half-note} = \text{quarter-note triplet}$ or $\text{quarter-note triplet}$; etc.

Triplets in half-notes are properly "third-notes", triplets in quarters "sixth-notes", triplets in eighths "twelfth-notes", etc., but are never named so.

In a long series of triplet figures, the sign 3 is written only a few times at the beginning, or in doubtful places.

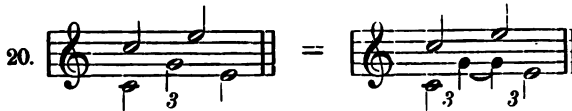
The performance of triplets is peculiarly difficult when notes of like denomination, but of regular length, are performed at the same time:



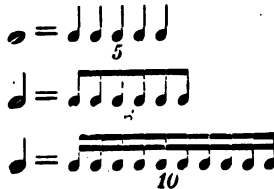
or notes of the next lowest denomination:



Here the musical feeling must hold fast to that note-value which stands above both those employed, carrying on the two different subdivisions simultaneously, yet independent one of the other. A thoroughly conscious subdividing is possible only in a very slow movement.




§ 17. If to a note of higher value 5, 7, or any other number of notes of less value are to be counted, that can neither be developed from the table nor represented by triplets, they are written in the kind of notes nearest them in value, and marked with a corresponding slanting figure.







We proceed similarly when, in exceptional cases, an *even* number of notes of lower value fall upon a dotted (tripartite) note; *e. g.* when 2, 4 or 8 notes fall upon a dotted half-note (a three-quarter note).



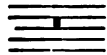
A slanting figure is therefore the sign for irregular subdivision.

Instead of the slanting figure, a figure under a slur was formerly always (and is still sometimes) employed .

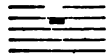
That this slur may not be confounded with the Tie (§ 14), or the Legato slur (§ 100) modern musicians write it shorter than these last, thus , , . In very complicated cases the Bracket  is used instead of the slur.

Rests.

§ 18. The signs of silence corresponding to the various notes are called Rests. For instance, where an interval of silence equal in length to the value of a *half-note* is required, the corresponding sign is called a *half-rest*.



Double Whole Rest.



Whole Rest.



Half-rest.



Quarter-rest.



Eighth-rest.



Sixteenth-rest.

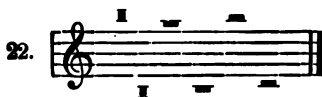
The Double Whole Rest blocks the entire space between two lines, and is usually set between the third and fourth.

The Whole Rest hangs from a line, usually the fourth.

The Half-rest lies on a line, usually the third.

The other rests are to be so written, as fully to fill the interval between the second and fourth lines.

Should it be necessary, from overfilling of the staff, to write a Double Whole, Whole, or Half-rest above or below the lines, the use of ledger lines is required for the sake of clearness.

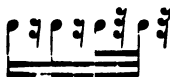


Rests for lesser tone-values than sixteenths take as many hooks as the corresponding notes; *e. g.* thirty-second rests take three hooks like the thirty-second note .

Sixty-fourth rest.

Hundred and twenty-eighth rest.

The hooks of several rests are *not* stroked together, but the hooks of notes separated by short rests are so joined:



Triple Whole Rest.

Triple Half-rest.

Triple Quarter-rest.

Triple Eighth-rest.

Triple Sixteenth-rest.

Septuple Eighth-rest.

Rests may be dotted like notes, *e. g.*

Dotted rests are, however, but little used (§ 93).

EXERCISE 5. Write rests of the following values:

$\frac{1}{4}$ $\frac{2}{1}$ $\frac{1}{2}$ $\frac{1}{1}$ $\frac{2}{2}$ $\frac{3}{8}$ $\frac{2}{32}$ $\frac{7}{16}$ $\frac{2}{1}$ $\frac{21}{32}$ $\frac{21}{16}$ $\frac{7}{4}$ $\frac{18}{16}$.

Rests corresponding to triplets are treated like the notes.



For a number of triplets, having the full value of a larger note, the rest corresponding to this latter is set.



§ 19. The notes of every piece of music are divided by perpendicular lines into little sections of equal note-value. These sections are called *Measures*, the dividing lines *Bars*. (Comp. IV, § 75.)

The Whole Rest is used as a rest for whole measures, even when they have a value unlike that of a whole note, and is therefore also called Measure Rest. *E. g.*, if a measure contain but three eighth-notes, a pause of that length is nevertheless indicated by a whole rest.



The same occurs when the measure contains more than a whole note, *e. g.* when it has a value of nine eighths. However, in $\frac{2}{3}$, $\frac{12}{8}$, $\frac{3}{4}$, $\frac{4}{2}$ and $\frac{2}{1}$ time many composers write instead of the whole rest a dotted whole rest, or a double whole, or dotted double whole rest.

When a piece of music is performed by several persons,

each one receives his share of the whole, his *part*, in a separate copy. Where such a part has to pause, the number of whole measures to be paused is designated by figures. Under these is set, either a single or double thick stroke, or a number of double-whole and whole rests corresponding to that of the measures paused; this latter, however, only for pauses of not over 12 measures in extent. Double-whole rests are then stroked together in pairs.



▲ Pause in all parts is styled General Pause (G. P.).

II.

Chromatic Signs. Scales.

Whole Tone.—Semitone (Half-tone).

§ 20. The semitone is the smallest interval between two tones. By "semitone" therefore we never understand any fixed pitch, such as *c* or *c*[♯], but the interval between two tones approaching each other as closely as possible. On the keyboard, the places where semitones lie are discernible from the fact, that between two keys no other lies, either white or black.

In the series of root-tones, the semitones lie between *e* and *f*, *b* and *c*.

§ 21. The two tones bounding a semitone are likewise termed a semitone; *e. g.* we say, the semitone *e-f*.

§ 22. The interval of two semitones is called a Whole Tone, whether the semitones belong to two successive degrees or to a single degree; for instance *g-a*, *cb-c*[♯].

Chromatic Signs.—Enharmonics.

§ 23. A Sharp (#) before a note raises it by a semitone.

When spoken, this raising is expressed by adding the word *sharp* to the root-name of the note, thus: *c-sharp*, *d-sharp*, *e-sharp*, etc.



§ 24. A Flat (b) before a note lowers it by a semitone.

When spoken, this lowering is expressed by adding the word *flat* to the root-name of the note, thus: *c-flat*, *b-flat*, *a-flat*, etc.



Exercise 6, 1, is to be read here. (See below.)

§ 25. Sharps and flats, and also the signs explained below in §§ 26—30, bear the common name of Chromatic Signs. These signs affect (modify) the note to which they belong to the end of the measure wherein they occur, *i. e.* to the next bar. *E. g.*



Read Exercise 6. 2.

§ 26. To cancel the effect of a # or b within the measure, the Natural (sometimes called Cancel) is required.

A Natural (n) before a note annuls the effect of a Sharp or Flat, restoring to the note its original position and name.



Read Exercise 6, 3.

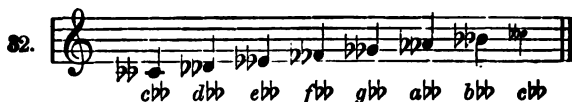
§ 27. A Double-sharp (\times) before a note raises it by a whole tone.

When spoken, this raising is expressed by setting the word *double-sharp* after the root-name of the note, thus: c-double-sharp, d-double-sharp, etc.



§ 28. A Double-flat before a note lowers it by a whole tone.

When spoken, this lowering is expressed by adding to the root-name of the tone the word *double-flat*, thus: c-double-flat, b-double-flat, a-double-flat, etc.

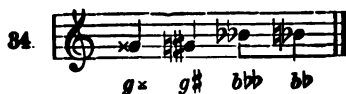


Read Exercise 6, 4.

§ 29. A Double-natural before a note annuls the effect of a \times or bb , restoring to the note its original position and name. [A superfluous sign; the \natural suffices. *Tr.*]



§ 30. The signs $\sharp\sharp$ and $\flat\flat$ annul one sharp of a \times and one flat of a bb respectively, but leave the other in force.



8.

4.

5. (§ 30.)

6.

EXERCISE 7. Read, play, and write out only in root-names, the following notes:

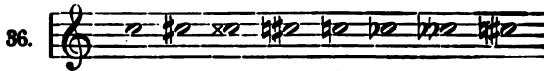
1.



EXERCISE 8. (1) Write, and play on the piano, semitones above and below

to root-tones (as $c-c\sharp$, $c-b$); to sharp or flat tones ($c\sharp-c$, $c\sharp-b\sharp$, $c\sharp-d$, $c\sharp-cx$); to double-sharp and double-flat tones ($cx-d\sharp$, $cx-c\sharp$).

(2) Write each root-tone and its derivatives formed by chromatic signs; e. g.



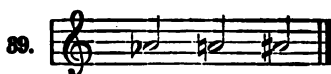
NOTE. Manner of writing chromatic signs:

$\sharp = || \nearrow$
 $\flat = | \searrow$ (from below).
 $\natural = \text{hook}$ (both beginning from above).
 $x = / \backslash$

§ 31. Tones sounding alike, but differently named and written, like b and cb , $c\sharp$ and db , etc., are *enharmonic changes* one for the others.*

* The minute differences in pitch between notes enharmonically exchangeable, which may be brought out on some instruments, or even transferred to keyed instruments, affect neither our tone-system as a whole, nor the definition of the semitone (§ 20, 21) in particular.

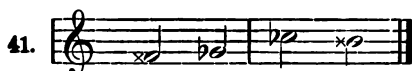




Here the same degree of the staff serves for notes of various pitch.—Secondly, in case of enharmonic changes.



Here different degrees of the staff serve for notes alike in pitch.—Thirdly, in cases like the following:



in which the higher note corresponds to the lower tone, and *vice versa*, but which, however, can scarcely ever occur, because they run directly counter to the aim of our musical notation.—clearness.

§ 32. Of a root-tone and all its derivatives we say, that they belong to the same degree. For ex., *c*, *c♯*, *cb*, *c×* and *cbb* belong to the degree *c*.

Whether a tone be raised or lowered, its degree remains the same. In musical notation, therefore, such raising and lowering is expressed only by chromatic signs. Thus from *c* may be derived, by raising, *c♯* and *c×*, by lowering *cb* and *cbb*; but by raising *c* we can never get *db*, or by lowering it get *b*, blunders often made by beginners.

By a semitone are raised:

Root-tones	by a ♯
Sharped tones	„ „ ×
Flatted	„ „ ♯
Double-flats	„ „ ♭

By a semitone are lowered:

Root-tones	by a ♭
Sharped tones	„ „ ♯
Flatted	„ „ ♭
Double-sharps	„ „ ×

By a whole tone are raised:

Root-tones by a \sharp
 Flatted tones " " \sharp
 Double-flats " " \sharp

By a whole tone are lowered:

Root-tones by a \flat
 Sharped tones " " \flat
 Double-sharps " " \flat

The range for raising and lowering a tone belonging to any degree embraces, therefore, two whole tones.

EXERCISE 10. Raise by half a tone sharpened, flatted, and double-flatted tones.

Lower by half a tone sharpened, flatted and double-sharped tones.

Raise by a whole tone flatted and double-flatted tones.

Lower by a whole tone sharpened and double-sharped tones.

§ 33. A distinction is also made between *chromatic* and *diatonic semitones*. Semitones are termed *chromatic*, when they belong to the same degree, as $c-c\sharp$; *diatonic*, when they belong to two adjacent degrees, as $c-d\flat$.* Two chromatic semitones in direct succession form a chromatic whole tone, as $c-c\sharp+c\sharp-c\sharp$.

EXERCISE 11. Form the diatonic semitones upwards and downwards to all root-tones, sharpened and flatted tones, and perhaps to $f\sharp$, $c\sharp$, $b\flat\flat$, and $e\flat\flat$ likewise.

$c\flat\flat\ c\flat\ d\ c\sharp\ d\ e\flat\ d\ c\sharp\ e\ f\ e\ d\sharp\ f\ g\flat\ f\ e\ g\ a\flat\ g\ f\sharp\ a\ b\flat\ a\ g\sharp\ b\ c\flat\ a\sharp\ c\sharp\ d\ c\sharp\ b\sharp\ d\sharp\ e\ d\sharp\ c\sharp\ e\sharp\ f\sharp\ e\sharp\ d\sharp\ f\sharp\ g\ f\ e\sharp\ g\sharp\ a\ g\sharp\ f\sharp\ a\sharp\ b\ a\sharp\ g\sharp\ b\sharp\ c\sharp\ b\sharp\ a\sharp\ c\flat\ d\flat\ c\flat\ b\flat\ d\flat\ e\flat\ d\flat\ c\flat\ f\flat\ g\flat\ f\flat\ e\flat\ g\flat\ a\flat\flat\ g\flat\ f\flat\ a\flat\ b\flat\flat\ a\flat\ g\flat\ b\flat\ c\flat\ b\flat\ a\flat\ f\sharp\ g\sharp\ f\sharp\ e\sharp\ c\sharp\ d\sharp\ c\sharp\ b\sharp\ b\flat\flat\ c\flat\flat\ b\flat\flat\ a\flat\flat\ e\flat\flat\ f\flat\flat\ e\flat\flat\ d\flat\flat$

* The chromatic semitone is also called *lesser*, the diatonic *greater*.

Within the bounds of our musical notation (Table No. 38) there are 30 diatonic semitones.

Form the whole tones in like manner.

$c\ d\ c\ bb, d\ e\ d\ c, e\ f\sharp\ e\ d$, etc.— $c\sharp\ d\sharp\ c\sharp\ b, d\sharp\ e\sharp\ d\sharp\ c\sharp$, etc.— $cb\ db\ cb\ bbb, db\ eb\ db\ cb$, etc.

There are 33 such whole tones.

Within the whole tone semitones are formed *chromatically*, *ascending* by raising the lower tone ($c\text{--}c\sharp\text{--}d$), *descending* by lowering the higher tone ($d\text{--}d\flat\text{--}c$). Changing semitones, which proceed from and return to the same tone, are formed *diatonically*, as $c\ db\ c, c\ b\ c, f\sharp\ g\ f\sharp, f\sharp\ e\sharp\ f\sharp, db\ ebb\ db, db\ c\ db$; wrong would be $c\ c\sharp\ c, c\ cb\ c, f\sharp\ f\flat\ f\sharp, f\sharp\ f\ f\sharp, db\ d\ db, db\ dbb\ db$.

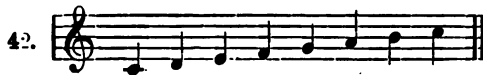
Form chromatic semitones, ascending and descending, between whole tones of the root-tones, sharpened tones, and flatted tones; the root-tones and sharpened tones; the flatted tones and root-tones; as $c\ c\sharp\ d, d\ db\ c; c\sharp\ c\sharp\ d\sharp, d\sharp\ d\ c\sharp; cb\ c\ db, db\ dbb\ cb; e\ e\sharp\ f\sharp, f\sharp\ fe; eb\ ef, f\ f\flat\ eb$.

There are 28 chromatic semitones.

The Diatonic Scales.

I. Major Scales.

§ 34. By progressing from c to its octave through the root-tones we obtain the scale $c\ d\ e\ f\ g\ a\ b\ c$.



In this scale $e\text{--}f$ and $b\text{--}c$ form semitones, all the other steps being whole tones. The succession of whole and half is therefore 2 whole, 1 half, 3 whole, 1 half, or, given only in figures, $1\ 1\ \frac{1}{2}\ 1\ 1\ 1\ \frac{1}{2}$.



Every scale, in which the whole and half tones are thus ordered in ascending progression, is called a *major* scale.

§ 35. The tone on which a scale begins is called its *key-note* or *tonic*, and gives its name to the scale, as *C-major*, *D-major*, etc. It is also called the fundamental tone.

The *C-major* scale, because containing only natural or root-tones, is taken as a pattern in forming the other scales, and therefore styled the *Natural* or *Standard Scale*.

§ 36. The major scale is *diatonic* (*i. e.* progressing by steps from degree to degree). The minor scale, to be treated later, is also diatonic. The *essential feature* of all diatonic scales is, that in them, whatever key-note be started from, all root-tones are represented in regular succession either by themselves or by their derivatives. No degree may be skipped or repeated, neither may enharmonic changes occur. It follows herefrom, that other diatonic scales besides the customary major and minor scales are possible.

§ 37. *To form the Major Scale upon a given Key-note.*

First method.

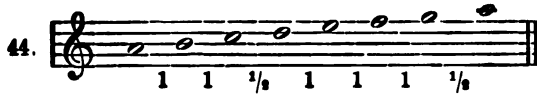
Write the given key-note and the seven root-tones following in ascending progression. The last tone will be the root-tone of the key-note in the higher octave.

Then write out the row of figures as in No. 43 ($1\ 1\ \frac{1}{2}$), so that a figure may stand between every two notes.

Now compare, beginning with the first two notes, the intervals between the successive notes with the intervals called for by the figures. Wherever an interval is too wide or too narrow, employ a chromatic sign to bring it into agreement with the figures. The given key-note is of course invariable, neither can any note already altered be again changed.

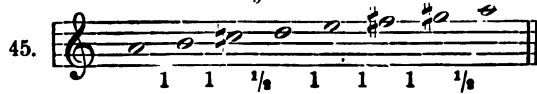
Result, the Major Scale of the given key-note.

Examples. Key-note *a* being given, to form the *A-major* scale.



- $a-b = 1$ (whole tone) therefore correct 1.
 $b-c = \frac{1}{2}$, too narrow by $\frac{1}{2}$; raise c by $\frac{1}{2}$, to $c\sharp$;
 $b-c\sharp = 1$ 1.
 $c\sharp-d = \frac{1}{2}$, therefore correct $\frac{1}{2}$.
 $d-e = 1$, " " 1.
 $e-f = \frac{1}{2}$, too narrow by $\frac{1}{2}$; raise f by $\frac{1}{2}$, to $f\sharp$;
 $e-f\sharp = 1$ 1.
 $f\sharp-g = \frac{1}{2}$, too narrow by $\frac{1}{2}$; raise g by $\frac{1}{2}$, to $g\sharp$;
 $f\sharp-g\sharp = 1$ 1.
 $g\sharp-a = \frac{1}{2}$, therefore correct $\frac{1}{2}$.

A-major scale.

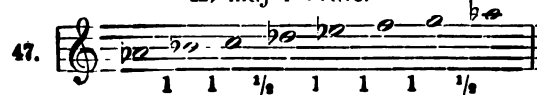


Key-note ab being given, to form $A\flat$ -major scale.



- $ab-b = 1\frac{1}{2}$, too wide by $\frac{1}{2}$; lower b by $\frac{1}{2}$, to $b\flat$;
 $ab-b\flat = 1$ 1.
 $b\flat-c = 1$, therefore correct 1.
 $c-d = 1$, too wide by $\frac{1}{2}$; lower d by $\frac{1}{2}$, to $d\flat$;
 $c-d\flat = \frac{1}{2}$ $\frac{1}{2}$.
 $d\flat-e = 1\frac{1}{2}$, too wide by $\frac{1}{2}$; lower e by $\frac{1}{2}$, to $e\flat$;
 $d\flat-e\flat = 1$ 1.
 $e\flat-f = 1$, therefore correct 1.
 $f-g = 1$, " " 1.
 $g-a = 1$, too wide by $\frac{1}{2}$; lower a by $\frac{1}{2}$, to $a\flat$;
 $g-a\flat = \frac{1}{2}$ $\frac{1}{2}$.

$A\flat$ -major scale.



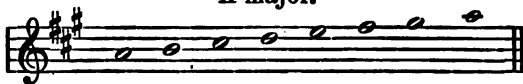
Second method.

Choose the key-note, and form, according to the formula $1\ 1\ \frac{1}{2}\ 1\ 1\ 1\ \frac{1}{2}$, diatonic whole and half tones; e. g., key-note $f\sharp$, $1\ g\sharp$, $1\ a\sharp$, $\frac{1}{2}\ b$, $1\ c\sharp$, $1\ d\sharp$, $1\ e\sharp$, $\frac{1}{2}\ f\sharp$.

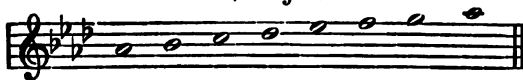
EXERCISE 12. Construct by both methods major scales, (1) to root-tones, (2) to $f\sharp$, $c\sharp$, cb , db , eb , gb , ab , bb . The first method is peculiarly adapted for written, the second for oral, exercises.

§ 38. The chromatic signs occurring in a major scale are not written, as in our examples, before *each individual note*, but *at the head of the whole scale*, and are then styled the *Signature* of the scale.

A-major.



48.

A \flat -major.

§ 39. The employment of the \sharp and \flat being precluded in the signature, the total number of major scales is limited to 15, namely:

One major scale without signature,
Seven major scales with sharps,
Seven major scales with flats.

The major scale without signature is C-major.

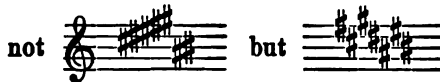
The major scales with sharps, arranged according to the number of sharps in the signature, are


G-major with 1 sharp, $f\sharp$.			
D	"	"	2 sharps, $f\sharp$, $c\sharp$
A	"	"	3 " $f\sharp$, $c\sharp$, $g\sharp$
E	"	"	4 " $f\sharp$, $c\sharp$, $g\sharp$, $d\sharp$
B	"	"	5 " $f\sharp$, $c\sharp$, $g\sharp$, $d\sharp$, $a\sharp$
$F\sharp$	"	"	6 " $f\sharp$, $c\sharp$, $g\sharp$, $d\sharp$, $a\sharp$, $e\sharp$
$C\sharp$	"	"	7 " $f\sharp$, $c\sharp$, $g\sharp$, $d\sharp$, $a\sharp$, $e\sharp$, $b\sharp$

The major scales with flats, in like order, are

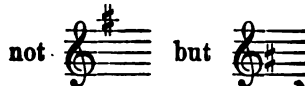
<i>F</i> -major with 1 flat, <i>b</i> <i>b</i> .	
<i>B</i> <i>b</i> " " 2 flats, <i>b</i> <i>b</i> , <i>e</i> <i>b</i> .	
<i>E</i> <i>b</i> " " 3 " <i>b</i> <i>b</i> , <i>e</i> <i>b</i> , <i>a</i> <i>b</i> .	
<i>A</i> <i>b</i> " " 4 " <i>b</i> <i>b</i> , <i>e</i> <i>b</i> , <i>a</i> <i>b</i> , <i>d</i> <i>b</i> .	
<i>D</i> <i>b</i> " " 5 " <i>b</i> <i>b</i> , <i>e</i> <i>b</i> , <i>a</i> <i>b</i> , <i>d</i> <i>b</i> , <i>g</i> <i>b</i> .	
<i>G</i> <i>b</i> " " 6 " <i>b</i> <i>b</i> , <i>e</i> <i>b</i> , <i>a</i> <i>b</i> , <i>d</i> <i>b</i> , <i>g</i> <i>b</i> , <i>c</i> <i>b</i> .	
<i>C</i> <i>b</i> " " 7 " <i>b</i> <i>b</i> , <i>e</i> <i>b</i> , <i>a</i> <i>b</i> , <i>d</i> <i>b</i> , <i>g</i> <i>b</i> , <i>c</i> <i>b</i> , <i>f</i> <i>b</i> .	

The signs in the signatures must always be repeated, whether written or recited, in the above order, so that the signs contained in the scale next preceding are always named first in like succession, and the new sign then added. We should therefore never say: *C**#*-major has for signature *c**#*, *d**#*, *e**#*, *f**#*, *g**#*, *a**#*, and *b**#*, although all these sharps are in the signature, but: *f**#*, *c**#*, *g**#*, *d**#*, *a**#*, *e**#*, *b**#*, because the signs enter in this latter order in the succession of scales. And as written

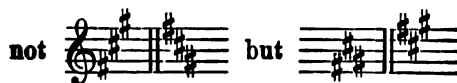


The signs in the signature occupy the same places on the staff as the notes they affect. At the same time, one sign affects all octaves of its note on the same staff; therefore no sign in the signature should be repeated in another octave, *e. g.* (wrong) , for the upper of these two *f**#*'s already affects all octaves on this staff.

Ledger lines must not be used for the signature, *e. g.*



Three signature-signs should not lie in line,



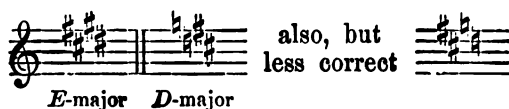
An exception to this rule is made with sharps, from the third to the fifth,



they being thus more equally distributed over the staff. With flats in the Bass clef a like result has been aimed at, in some later publications, by a similar placing of the last three, without, however, attaining a satisfactory effect.



When the signature is so changed in a piece that certain of its signs become void, the same must be explicitly cancelled.



Where a new staff is begun at the same time, this is written at the end of the old staff.

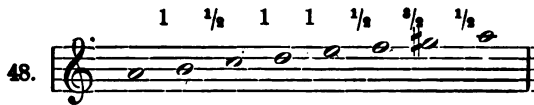
EXERCISE 13. Write the signatures of all scales both in the Violin and Bass clefs.

EXERCISE 14. The 15 major scales here constructed are to be learned by heart in ascending and descending order, and practiced until perfect fluency is gained. Similarly their succession and signatures. Read Exercise 2, providing it with signatures.

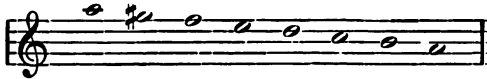
II. Minor Scales.

A. Harmonic Minor Scales.

§ 40. In the harmonic minor scale the tones succeed each other at the following intervals:



descending reversed:

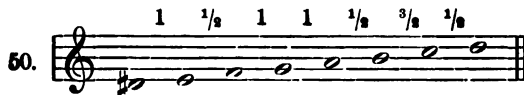


Thus between the sixth and seventh degrees there is a step (interval) of three semitones.

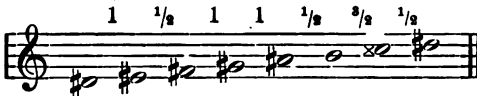
§ 41. To construct the harmonic minor scale to a given key-note.

This is performed, as with the major scale (§ 37), by comparing the series of root-tones with the formula in figures (§ 40) and correcting the former by the latter, or by constructing diatonically from the key-note upward.

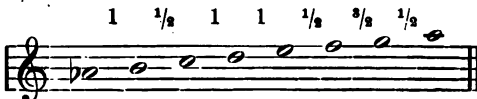
Examples. First method. Given key-note $d\sharp$.



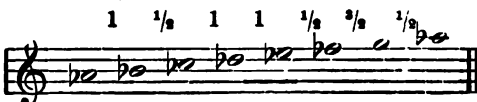
Result of comparison:



Given key-note $a\flat$:



Result:



Second method. Key-note $f\sharp$, 1 $g\sharp$, $\frac{1}{2}$ a , 1 b , 1 $c\sharp$, $\frac{1}{2}$ d , $\frac{3}{2}$ $e\sharp$, $\frac{1}{2}$ $f\sharp$

EXERCISE 15. Construct as above harmonic minor scales (1) to root-tones, (2) to $c\sharp$, $d\sharp$, $f\sharp$, $g\sharp$, $a\sharp$, eb , ab , bb , as given key-notes.

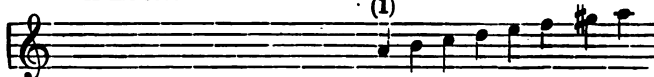
Relative Scales. Scales of like name.

§ 42. The signature of every minor scale is like that of the major scale whose third degree in descending is the key-note of the minor scale.*

C-major.



A-minor.



Major and minor scales with like signature are called *relative scales*. A-minor having no signature, and serving as pattern for the construction of the minor scales, is termed the *standard minor scale*.

The relative scales are:

C-major — a-minor (no signature)

<i>G-major — e-minor, 1♯</i>	<i>F-major — d-minor, 1♭</i>
<i>D-major — b-minor, 2♯</i>	<i>B♭-major — g-minor, 2♭</i>
<i>A-major — f♯-minor, 3♯</i>	<i>E♭-major — c-minor, 3♭</i>
<i>E-major — c♯-minor, 4♯</i>	<i>A♭-major — f-minor, 4♭</i>
<i>B-major — g♯-minor, 5♯</i>	<i>D♭-major — bb-minor, 5♭</i>
<i>F♯-major — d♯-minor, 6♯</i>	<i>G♭-major — eb-minor, 6♭</i>
<i>C♯-major — a♯-minor, 7♯</i>	<i>C♭-major — ab-minor, 7♭</i>

* The fact, that the minor scale can have no distinct signature, springs from the necessity, that a like number of signs in the signature must also have a like signification.

The minor scales, arranged according to signatures, are therefore:

Without signature: *a*-minor.

With sharps: *e*, *b*, *f* \sharp , *c* \sharp , *g* \sharp , *d* \sharp , *a* \sharp -minor.

With flats: *d*, *g*, *c*, *f*, *b* \flat , *e* \flat , *a* \flat -minor.

EXERCISE 16. Commit to memory names of minor scales in above order.

EXERCISE 17. Name the relative scales to major and minor scales.

EXERCISE 18. Learn by heart the relative scales given above in this § in the following order; first, the standard scales, next the sharp scales, and lastly the flat scales.

§ 43. *As the minor scales borrow their signatures from their relative major, it happens, that the minor scale departs from its own signature in the seventh degree. This is always a semitone higher than shown by the signature.*

Thus the seventh degree in *a*-minor is not *g*, but *g* \sharp ; in *g* \sharp -minor (5 \sharp) not *f* \sharp , but *f* \times ; in *c*-minor (3 \flat) not *b* \flat , but *b*.

Herefrom results an easy method of constructing the harmonic minor scales. Key-note and signature are known from § 42. The minor scales are constructed accordingly, with the sole deviation, that *the seventh degree is raised by a semitone.*

EXERCISE 19. Construct orally, by this method, harmonic minor scales.

EXERCISE 20. Learn by heart all harmonic minor scales until perfect fluency is attained.

§ 44. In the harmonic minor scales the third and sixth degrees are a semitone lower than in the major scales of like name. Otherwise they are alike.

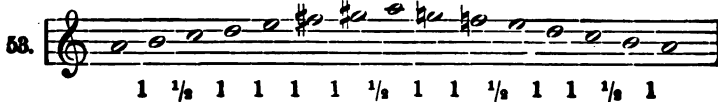


F#-minor.

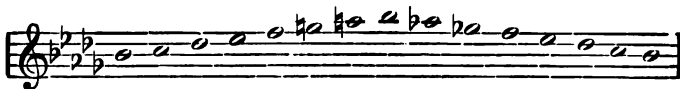
B. *Melodic Minor Scales.*

§ 45. The *melodic* minor scales differ from the harmonic therein, that they do not, like the latter, raise merely the seventh degree both in ascending and descending, but *raise in ascending the sixth and seventh degrees, while in descending neither of these degrees is raised.*

A-minor melodic.



Bb-minor melodic.



The melodic minor scales depart, therefore, from the signature in two degrees in ascending, and not at all in descending.

EXERCISE 21. Construct accordingly all minor scales given in § 42 as melodic scales.

§ 46. The minor scale first treated of is termed *harmonic* because based on the fundamental chords of the key. The other is termed *melodic* because it deviates from the harmonic in favor of melodic progression. For it alters the unmelodic progressions $\frac{3}{2}$ — $\frac{1}{2}$ upwards, and $\frac{1}{2}$ — $\frac{3}{2}$ downwards, into 1—1. The harmonic scale is the more logical, as distinctly exhibiting our musical system.

The table (pp. 42—43) again presents the material for exercises Nos. 12—22.

REMARK. In order thoroughly to master these scales, and with them the foundation of all music, there is but one method, namely, to sing them by heart to the names of the notes.

§ 47. Those scales in which double-sharps and double-flats would necessarily occur are, it is true, excluded, and their signature is nowhere to be found; yet, as they occasionally are brought (by modulation), in part or in entirety, into pieces with the customary signatures, and their knowledge being requisite to a deeper insight into the musical system, the student should practice their construction as well.

EXERCISE 22. Construct (by § 37, second method) major scales to the following key-notes: *G*#, *D*#, *A*#, *E*#, *F*b, *B*b, *E*b.

Construct the relative minor scales (§§ 41, 43, 45), harmonic and melodic, to the above major scales.

§ 48. The degrees of the diatonic scales are variously designated; namely:

First degree, written abbrev. I, Prime, or Tonic (fundamental),			
			in <i>C</i> -major <i>c</i>
Second	„	„	II, Second or Supertonic, <i>d</i>
Third	„	„	III, Third or Mediant, <i>e</i>
Fourth	„	„	IV, Fourth or Subdominant, <i>f</i>
Fifth	„	„	V, Fifth or Dominant, <i>g</i>
Sixth	„	„	VI, Sixth or Submediant, <i>a</i>
Seventh	„	„	VII, Seventh or Leading-note, <i>b</i>
Eighth	„	„	VIII, Octave, Key-note, Tonic, <i>c</i>

The Dominant of each sharp scale is key-note of that next in order; the Subdominant of each flat scale is the key-note of the next.

Chromatic Scales.

§ 49. A scale progressing by half-tone steps is termed a chromatic scale. Out of connection with compositions the

diatonic Scales.

Minor melodies.

The image displays 15 staves of musical notation, each representing a diatonic minor scale. The scales are written in treble clef and are labeled with a letter indicating the starting note: a, e, b, f#, c#, g#, d#, a#, d, g, c, f, bb, eb, and ab. Each scale is written in a stepwise fashion, covering two octaves. The notation includes sharp and flat accidentals to indicate the correct pitch for each note in the scale.

ascending scale is usually written with sharps, the descending one with flats.



Construct chromatic scales ascending with root-tones and sharps, descending with root-tones and flats, *e. g.* from *c* to *c*[♯], from *c* to *c*[♭], etc.

In connection with a composition, the chromatic signs are so chosen that the fundamental diatonic scale remains distinctly recognizable.



In general, we proceed here according to § 33 on the chromatic semitones (formed in ascending by sharps, in descending by flats); however, instead of the sharp sixth we customarily write the *flat seventh* (as above, *a* for *g*× in going up), and instead of the flat fifth the *sharp fourth* (as above, *e*♯ for *f* going down). Here we would recommend that major scales be transformed to chromatic by insertion of semitones.

Keys.—Relative and like-named keys.— Modes.—Interconnection.—Circles of Fifths and Fourths.

§ 50. Every composition bears the signature of one of the 30 scales tabulated on pp. 42—43.

We say of a composition bearing the signature of any scale, that *it is (written) in the key* similarly named. Under the term *key* we understand the relation of the tones to an individual tone as key-note. *E. g.*, where a composition bears the signature of the *E*-major scale (4 ♯) we say: *It is (written) in E-major.*

The term *Scale* is used only of tones connected in stepwise succession; the term *Key* is applied to every species of tone-connection.

The terms "relative" and "homonymous" (like-named) are applicable to keys as well as to scales.

The names of Degrees of the Scale given in § 48 are also applicable to the Key. (Comp. § 117.)

Major and *Minor*, considered without reference to the other musical relations by which they are in practice always limited, are called *Modes*.

§ 51. The signature in itself always leaves undecided, whether a piece of music is in a major key or its relative minor. For distinguishing this point, the safest clew for the beginner is *the last lowest tone*, which is always the Tonic of the key.* *E. g.*, if a piece have 4 # in the signature, and may, therefore, be either in *E*-major or *c*♯-minor, look at the last and lowest tone; if this be *E*, the piece is in *E*-major; if *C*♯, in *c*♯-minor.**

57.



* Exceptions are, at least, extremely rare.

** In works by masters of the last century we still occasionally find wrong signatures. *E. g.*, Bach, Sonata for solo violin, in *G*-minor with one ♭; Haydn, String-quartet in *C*-major (Trautwein 68, Leipzig, 19. 2, Paris, 1, 6) Trio of second Minuet, *C*-minor with two ♭; also closing Chorus of Bach's St. Matthew's Passion.

After a little practice the ear readily recognizes by the tones, intervals (Sect. VII), and chords (Sect. VIII), what the mode is.

§ 52. Major or minor keys, whose signature differ by *only* one chromatic sign, are called *related* keys. For instance, *C*-major is related to *G*-major, *B \flat* -major to *E \flat* -major, *C*-major to *F*-major, *a*-minor to *e*-minor, *a*-minor to *d*-minor, etc. In a broader sense, relative and like-named keys are also called related.*

§ 53. The relationship of keys is of high importance in music; we shall therefore now devote to it the space necessary for a clear explanation.

The interval between the key-notes of any two successive sharp keys (in major and minor) is always the same; that is, the key-note of the next is always a fifth above that of the preceding key. The same relation subsists between the first sharp key, *G*-major (*e*-minor), and the natural key of *C*-major (*a*-minor). Consequently, in the following two series all intervals are alike:

C-maj., *G*-maj., *D*-maj., *A*-maj., *E*-maj., *B*-maj., *F \sharp* -maj., *C \sharp* -maj.
a-min., *e*-min., *b*-min., *f \sharp* -min., *c \sharp* -min., *g \sharp* -min., *d \sharp* -min., *a \sharp* -min.

The intervals between key-notes of the seven flat keys are likewise equal, that is, the key-note of the next is always the fourth tone above the key-note of the preceding key. The same relation subsists between the first flat key, *F*-major (*d*-minor), and the natural key of *C*-major (*a*-minor). Consequently, in the following two series all intervals are also alike:

C-maj., *F*-maj., *B \flat* -maj., *E \flat* -maj., *A \flat* -maj., *D \flat* -maj., *G \flat* -maj., *C \flat* -maj.
a-min., *d*-min., *g*-min., *c*-min., *f*-min., *b \flat* -min., *e \flat* -min., *a \flat* -min.

* For the sake of a clear distinction, the major keys here are always written with capitals, the minor keys with small letters, although this practice is not universal.

Now, the fourth tone upward is like (is the octave of) the fifth tone downward. Therefore, in the *last* two series, each successive key-note is really the fifth tone downward from the one preceding. In order to present the same relation in the last two series as in the first two, we merely need to reverse them. In the series:

C♭-maj., G♭-maj., D♭-maj., A♭-maj., E♭-maj., B♭-maj., F-maj., C-maj.
a♭-min., e♭-min., b♭-min., f-min., c-min., g-min., d-min., a-min.

each successive key-note is the fifth tone upwards from the one preceding, and thus the same relation is observable here as in the first two series embracing the sharp keys.

Hereby we are enabled to construct a series including *all* the keys at intervals equal throughout, having *C-major* (*a-minor*) as their centre.

<i>C♭</i>	<i>G♭</i>	<i>D♭</i>	<i>A♭</i>	<i>E♭</i>	<i>B♭</i>	<i>F</i>	<i>C</i>	<i>G</i>	<i>D</i>	<i>A</i>	<i>E</i>	<i>B</i>	<i>F♯</i>	<i>C♯</i>
<i>a♭</i>	<i>e♭</i>	<i>b♭</i>	<i>f</i>	<i>c</i>	<i>g</i>	<i>d</i>	<i>a</i>	<i>e</i>	<i>b</i>	<i>f♯</i>	<i>c♯</i>	<i>g♯</i>	<i>d♯</i>	<i>a♯</i>
7♭	6♭	5♭	4♭	3♭	2♭	1♭	0	1♯	2♯	3♯	4♯	5♯	6♯	7♯

In these series we observe, that the three last keys, found at the extreme right and left, are enharmonic exchanges one for the other. and therefore alike in sound. (§ 31.)

<i>B</i> = <i>C♭</i>		<i>F♯</i> = <i>G♭</i>		<i>C♯</i> = <i>D♭</i>
<i>g♯</i> = <i>a♭</i>		<i>d♯</i> = <i>e♭</i>		<i>a♯</i> = <i>b♭</i>
<i>5♯</i> = <i>7♭</i>		<i>6♯</i> = <i>6♭</i>		<i>7♯</i> = <i>5♭</i>

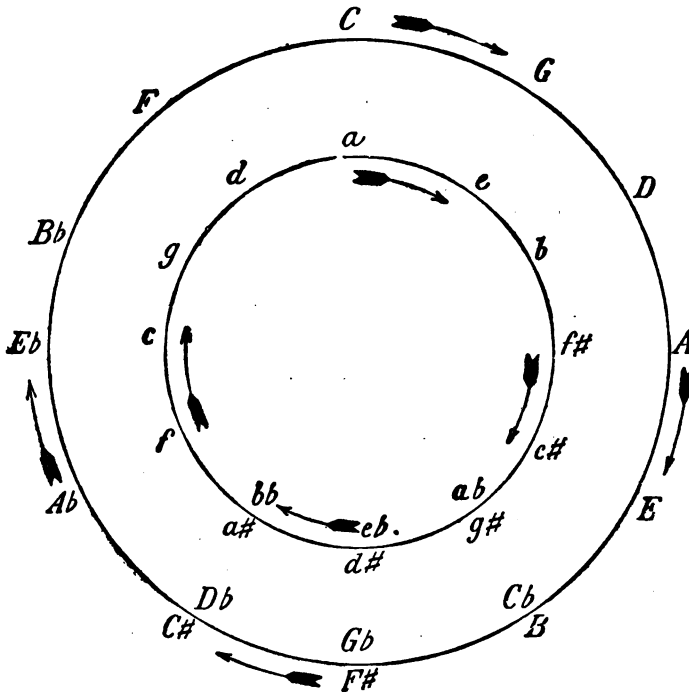
Opposite roads here lead to the same goal; from which it follows, that we have not advanced in a straight line, but in a circle. This circumstance is decisive for a circular representation, which is alone suited practically to present to view the coincidence of the enharmonic keys, and also the relationship (interconnection) of all keys.

This representation is styled the Circle of Fifths, because, from whatever point one starts around either of the circles in the direction *C-G* or *a-e*, the next-following key-note is always the Fifth (fifth degree) of the preceding key

(i. e. forms with the latter an interval of a fifth, § 102), provided the enharmonic change be supposed to take place on one of the points doubly named. *E. g.*

$$E \ B \ F\sharp \left\{ \begin{array}{l} C\sharp \\ D\flat \ A\flat \ E\flat \text{ etc.} \end{array} \right.$$

Circle of Fifths.

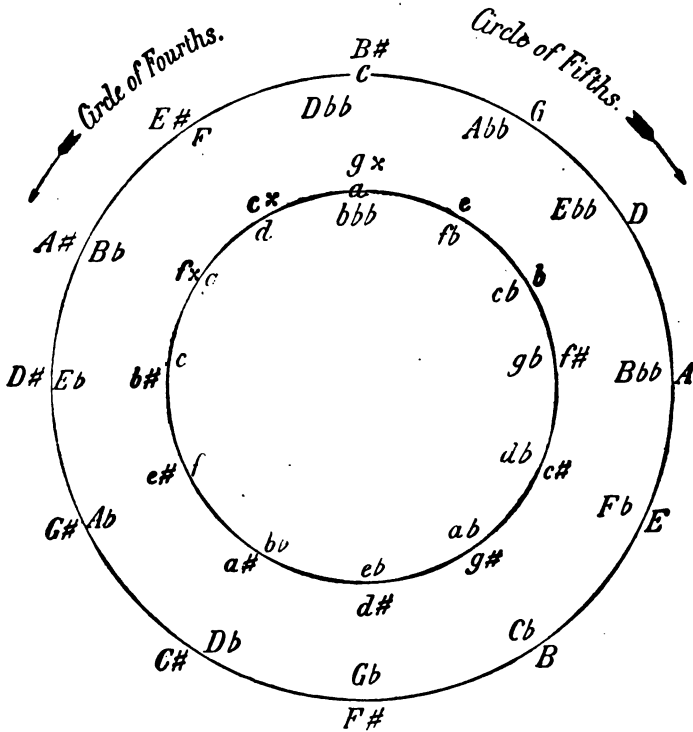


This representation is also called the Circle of *Fourths*, because in following either of the circles in the contrary direction (*C-F*, *a-d*) every succeeding key-note is the Fourth (fourth degree) to that preceding it (that is, forms with the latter the interval of a fourth); for a fourth going up is the same as a fifth going down. *E. g.*

$$E\flat A\flat D\flat G\flat \left\{ \begin{array}{l} C\flat \\ B E A \text{ etc.} \end{array} \right.$$

The Circle of Fifths is to be learned by heart in the following abbreviated order:

- (1) Major. $C G D A E B \underline{F\sharp} = G\flat D\flat A\flat E\flat B\flat F C$
 (2) Minor. $\mathfrak{a} \mathfrak{e} \mathfrak{b} \mathfrak{f}\sharp \mathfrak{c}\sharp \mathfrak{g}\sharp \underline{\mathfrak{d}\sharp} = \mathfrak{e}\flat \mathfrak{b}\flat \mathfrak{f} \mathfrak{c} \mathfrak{g} \mathfrak{d} \mathfrak{a}$



We know already, that there is nothing to hinder the extension of the series of keys either way but the inconvenience of signatures; and that, nevertheless, some keys lying beyond C \sharp , a \sharp , C \flat and a \flat actually occur in compositions in certain modulations.

If we disregard this consideration, and, carrying out the system consistently, extend the series of keys towards either side as prescribed by the chain of key-notes in fifths or fourths, we can reach on both sides, by the aid of enharmonics, the starting-point **C** (a).

C, G D A E B F# C# G# D# A# E# B# = C
a, e b f# c# g# d# a# e# b# f# c# g# = a
C, F Bb Eb Ab Db Gb Cb Fb Bbb Ebb Abb Dbb = C
a, d g c f bp eb ab db gp cv fb bbb = a

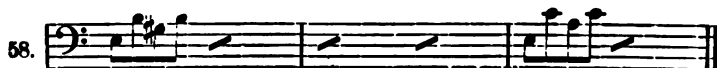
Presented in combined circles of Fourths and Fifths on page 49, the sharp keys outside the circles, the flat keys inside.

III.

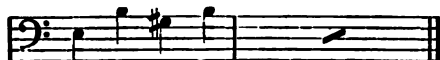
Abbreviations and Special Signs in Notation.

Repetition of Note-groups. — Tremolo

§ 54. When a note-group is repeated, once or several times, in precisely similar form and immediate succession, it is often written out only once, and the repetitions indicated by heavy diagonal strokes.




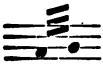

instead of:





instead of:



When two quarter-notes *without* dots are needed for such an abbreviation, the stems of the notes are omitted for the sake of clearness, or the strokes do not touch the stems.  would be taken for two thirty-second notes,

 or:  signifies a fourfold repetition of these two thirty-second notes.

We proceed similarly with eighth-notes:  some-times 

The two notes of higher value, employed to indicate the alternation of two tones, have, as may be seen above, when combined, only the time-value of *one* note of their class.

The alternation of three notes is seldom expressed in this manner. (Spontini, Vestalin, full score.)

63  signifies 



The quickest possible repetition of a tone or chord, and likewise the quickest possible alternation of two tones or chords, is called a *Tremolo*. The tremolo is indicated by several strokes above or below the notes in question, and by adding the word *tremolo*, abbr. *trem.* This latter is, however, often left out. In this case the composer must see to it, that the performer be not led to execute notes of determinate value by insufficient stroking.

trem.  trem. 
64   

Adagio (slowly). Allegro (rapidly).

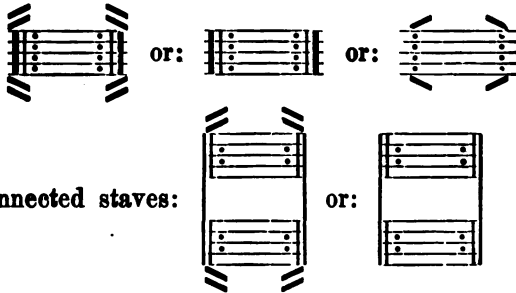
  

Pause.—Repetition of longer Sections.—Bis.

§ 55. The sign  or , the Pause or Hold, signifies that the notes or rests over or under which it stands shall be dwelt upon for an indeterminate time beyond their actual value. On the bar, it indicates a rest between two measures.

The same sign is sometimes used by older composers as sign for the close, instead of the word *Fine* (end).

§ 56. Such sections or periods as are to be repeated are enclosed between the two following signs:






with connected staves:

or:

At the beginning of pieces the first of the two signs is usually left out, as the second suffices to indicate the repetition.

The repetition of whole movements is also indicated by *Da Capo* (from the beginning), abbr. *D. C.*

§ 57. If a piece is to be played over from the beginning *up to* a certain place, this place is marked in one way or another, *e. g.* by , or by *Fine* (end), or by a conventional sign, usually \S , to which the direction to repeat must direct the player. Thus, *D. C. al*  (from beginning to ); *D. C. (sin) al Fine* (from beginning to end); *D. C. al* \S or *al* \oplus (to the sign).

If in such case the Pause stands over or under a short note, the latter is, under certain circumstances, to be held longer at the repetition. In this case the Pause appears in both of its significations (§ 55).

If a piece is to be played over from a given point, this must again be marked in some way and the player's attention called to it; *e. g.*, **dal ♪**, or **dal segno** (from ♪ onward, or: from the sign) etc. Or else the same (better the reversed) sign may be set without further addition, with like signification; ♪ means, **dal segno**.

The directions as to from where and to where a repetition shall extend are combined in terms like: **dal ♪ al ⊕** (from the ♪ to the ⊕), or **dal ♪ al ∩**. A similar sign then serves for connecting the following section to the part repeated, *e. g.* the **Coda** (closing section).

§ 58. Should it happen that an entire piece is to be repeated, it is designated by name, as **Menuetto, Scherzo, la prima parte** (the first part), with direction back to same. Thus, **Menuetto da capo, la prima parte da capo**, etc.

§ 59. If in any part of a composition repetitions have occurred, which are to be omitted on repeating the whole piece, the phrase is added: **(ma) senza ripetizioni**, or abbr. **senz. rep.** ([but] without repetitions).

§ 60. When a repetition is to be made, from which the last measure or measures are to be excluded, this is indicated by, **la prima volta, lma volta, lma, I, or 1.** (the first time); and that part, which on repeating takes the place of the above measure or measures, is marked **la seconda volta, llda volta, llda, II, or 2; e. g.**



§ 61. The immediate repetition of one or a few measures is indicated by the word **bis** (twice) written over the same, but only in manuscript.



Appoggiatura.

§ 62. Small notes preceding one of usual size are struck rapidly before the latter. *Their value is subtracted from that of the preceding note or rest.* (Comp. Chopin, *E-minor Étude*). Where but one such note occurs, it commonly bears a stroke through its hook, as $\text{f} \text{X}$. For short appoggiaturas smaller note-values are employed.



to be executed:



The stems of appoggiaturas usually point upward.

§ 63. The long appoggiatura. In old-style compositions (*e. g.* by Mozart, Haydn, sometimes Beethoven) often occur little notes in the form of an appoggiatura without a stroke through hook. These should not be struck short before the main note, neither should their value be subtracted from the note preceding; but they appropriate the first part of the value of that note before which they stand. As a rule, they are held as long as the note-value, which they represent, calls for:

but:



executed:



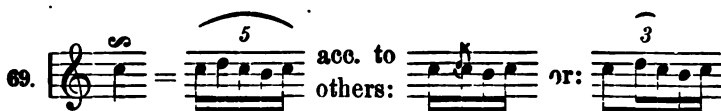
In pieces where such long appoggiaturas occur, the simple, short appoggiaturas are always marked by a stroke.

As the long appoggiatura can everywhere be replaced by a common note, and may very easily be taken wrongly for the short appoggiatura, and is therefore not only superfluous, but at times confusing, it is no longer used by modern composers.

The Turn.

§ 64. The *Turn* (∞) consists of five notes, namely the main note (written), the degree above, the main note, the degree below, and the main note.

If the sign for a turn be set over a short note, the above five notes are to be in uniform time as a quintuplet:



Where a short note with turn is followed directly by the same note, the last note of the turn is omitted:



With *short* dotted notes the turn has reference only to the *note*, *not* to the dot: $\overset{\infty}{\text{p}^{\cdot}} = \overset{\infty}{\text{p}} \text{p}^{\cdot}$, when the value of the dot belongs to the next count of the measure. (Section IV.)

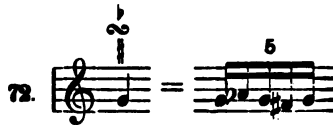
§ 65. With *longer* notes in a *slow* movement the turn always belongs to the second part of the note, and should be set in the place where it is to be executed. In such case the main note is not struck again *in the turn*, which is thus limited to 4 tones; where the main note is immediately repeated it is struck, *in the turn*, neither at beginning nor end, and the turn thus limited to 3 tones:



executed:



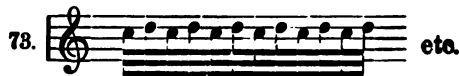
§ 66. A chromatic sign *over* the ∞ affects the degree next above the main tone; one *below* the ∞ affects the degree next *below* the main tone:



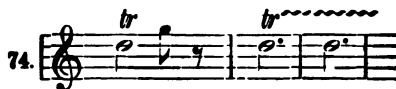
The sign for the turn, set perpendicularly or reversed, is still occasionally used to indicate an inverted turn; the sign crossed indicated that the lowest tone should be raised.

Trill.—Mordent.

§ 67. A *Trill* (or *Shake*) is the extremely rapid and even alternation of two consecutive tones:



The lower of these is termed the main tone, and written in the shape of a common note, in value equal to the length of the trill, as the main note. The sign for a trill, *tr*, is written above or below the main note; the time for which this sign takes effect is marked, especially when it extends over several notes, by a wavy or dotted line:

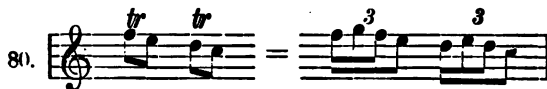




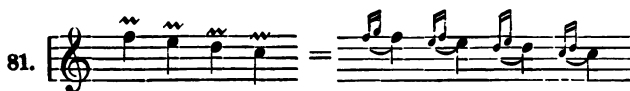
§ 71. Where several trills follow each other stepwise under a common trill-sign, as a so-called chain of trills, a stepwise transition is also effected between them in their execution, by alternately beginning one trill upon the main tone, and the next upon the higher tone:



In a rapid movement with short notes, the trill must be limited to one or two beats, and close on the main tone:



§ 72. A short double appoggiatura, like a main note with higher neighboring degree, is termed a *Mordent*, and is indicated by the sign ~.



With old-time composers, *e. g.* Seb. Bach, and occasionally with Haydn, Mozart and Beethoven as well, are found signs of embellishment, now replaced by notes, whose explanation is left to the instructor in each special case.

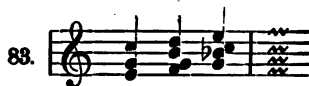
§ 73. *Simile* (abbr. *sim.*) [similarly, in like manner] signifies that the passage where it stands is to be executed

in the same way as the similar one immediately preceding it, in which the execution is indicated:



Here the term *simile* denotes that the figures in the two last measures are to be executed precisely like that in the first measure, wherein the execution is designated by the slur, the *sf*, and the staccato-dots. *Segue* may be written instead of *simile*.

In theoretical works and old printed music, the so-called *Direct* (ω) is often used to indicate what notes either follow just after a musical quotation, or (in continuous works) commence the following staff or page:



Here the Directs show that the next following chord is:



Auxiliary Terms and Terminations.

§ 74. EXERCISE 23. The following terms and terminations, belonging to the Italian language, and of very frequent occurrence in manifold connections in musical compositions, are to be memorized with their meanings.

e, ed and.	the comparative; <i>più forte</i> ,
il, lo, la, l' the (sing.).	louder).
l, gli, le the (plur.).	<i>meno</i> less.
uno, un, una a, an, one.	<i>poco</i> little.
non not.	<i>solo</i> alone.
<i>più</i> (pron. pew) more (sign of	<i>troppo</i> too.

quasi almost, as if, as it were.
ben well, fittingly.
giusto exact, precise, appropriate.
assai very.
molto very.
tutti all.
unisono in unison.
con with; is combined with the article to *col*, *colla*, *col*, *colle* (with the).

senza without.
 — **mente** (adverbial termination).
 — **issimo** (superlative termination) most, very.
poco a poco little by little.
sempre always.
 — **ino** { (endings of diminut.)
 — **etto** { a little, almost.
maggiore major.
minore minor.

IV.

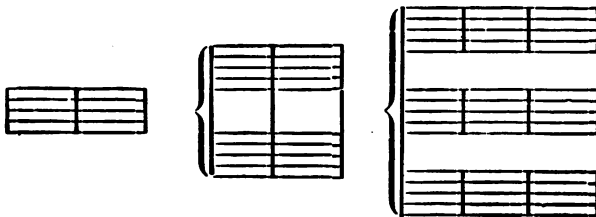
Time.

Measure.—Bar.—Time.—Time-signature.— Counts of a Measure.—Initial Arsis.

§ 75. Every piece is divided into small sections of equal time-value, called Measures.

This division is made audible by accentuation (stress).

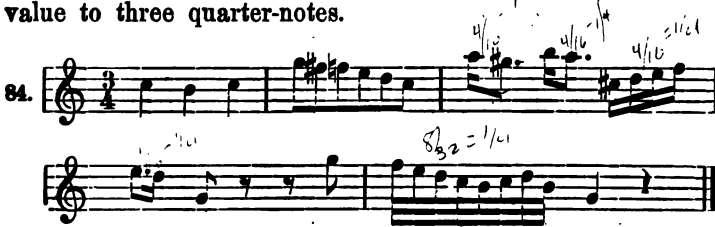
§ 76. In notation these divisions are marked by perpendicular lines called Bars, drawn through the staff (or, with combined staves, usually through all) at the end of each measure:



§ 77. With reference to the different note-values and accentuation of the measures, different kinds of Time are

formed. Time is therefore the property of the measure derived from note-value and accentuation.

The time is indicated at the beginning of every piece in the form of a fraction, with no stroke between the figures. *E. g.*, if $\frac{3}{4}$ stands at the head of a piece, it signifies that each following measure contains notes or rests equal in value to three quarter-notes.



The time-signature follows the key-signature, but is not repeated, as the latter commonly is, at the head of each new staff or page, but set once for all at the beginning.

§ 78. The equal parts of the measure, whose number and kind the signature shows, are called Counts of a measure. Thus in $\frac{4}{4}$ time the quarters are counts, but not half-notes or eighths.

§ 79. The numerator of the time-signature expresses the number of counts, hardly without exception 2, 3, 4, 6, 9 or 12.

The denominator expresses the kind (note-value) of the counts, *e. g.* whole notes, halves, quarters, eighths, etc., the two last by far most frequently.

§ 80. The usual species of time are therefore:

2	2	3	3	3	4	4	6	6	9	9	12	12
4	2	4	8	2	4	2	4	8	8	16	8	16

In place of the fraction $\frac{4}{4}$ the sign $\overline{\overline{C}}$ is used; for the fractions $\frac{3}{4}$, $\frac{3}{8}$, $\frac{4}{8}$ the sign $\overline{\overline{C}}$.

The last three kinds of time are called *alla breve* time, a designation properly applied only to $\frac{3}{4}$ and $\frac{4}{8}$ time. these having the value of a breve ($\overline{\overline{C}}$, § 13). However, in

modern music, the term *alla breve* has assumed the signification of a direction to count or beat half-notes, and is thus even used on occasion, although wrongly, with $\frac{3}{2}$ time. $\frac{3}{2}$ time is usually called four-four time, sometimes with the addition, *alla breve*.

§ 81. Measures having an even number of counts (2, 4, 6, 12) are called *binary* (two-part).

Measures with an odd number of counts (3, 9) are called *ternary* (three-part).

§ 82. Measures with a simple number of counts (2, 3) are called *simple*.

Measures with a compound number of counts ($4 = 2 \times 2$, $6 = 2 \times 3$, $9 = 3 \times 3$) are called *compound*.

§ 83. Regularly accented counts are called *strong*, regularly unaccented counts *weak*, (strong or weak beats).

§ 84. Equal parts of counts are called *subdivisions*.

§ 85. The incomplete measure often found at the beginning of a piece is called the *initial arsis* (Auftakt):



The initial arsis must form, combined with the closing measure, a full measure, when a repetition takes place:



Inner Articulation.

Accent or Stress.

§ 86. Only the number of counts is of musical significance; the choice of note-values depends upon the clearness of the style of notation. Thus

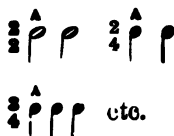
$\frac{3}{4}$, $\frac{3}{8}$ and all measures with two counts,
 $\frac{3}{4}$, $\frac{3}{8}$, $\frac{3}{16}$ and all measures with three counts,
 $\frac{4}{4}$, $\frac{4}{8}$ and all measures with four counts,
 $\frac{6}{8}$, $\frac{6}{16}$ and all measures with six counts

are distinguishable only in the notation, but not at all for the ear and musical conception.

On the other hand, measures of equal *note-value* but different *number of counts* (e. g. $\frac{3}{4}$ and $\frac{6}{8}$, $\frac{12}{16}$ and $\frac{9}{8}$) are distinguishable by the *accent*.

Accent is the stress or emphasis laid on special counts

§ 87. Simple measures have but one accent, namely on the first count (or beat).



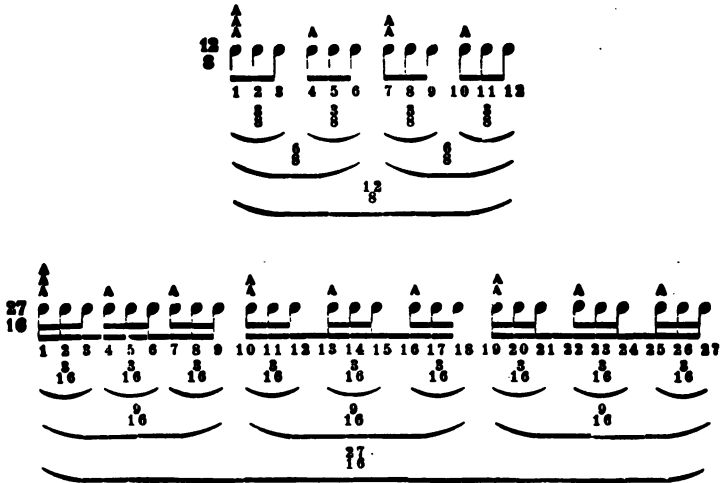
Compound measures are formed of 2 or 3 simple ones, and take, besides the accents belonging to the latter, a stronger accent on the first count, thus having a twofold accent.

Simple measures contained in compound ones form subdivisions of these latter.



Double compound measures are formed from 2 or 3 compound ones, and take, besides the twofold accent of these latter, a stronger accent on the first count, thus having a threefold accent.

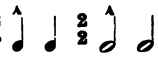


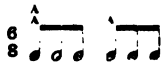


The simple and compound measures contained in the double-compound measure form the subdivisions of these latter.



We perceive, that the even numbers of counts are always divided evenly, though sometimes admitting of an odd number of divisions; 6 is always 2×3 , 12 always 2×6 . Consequently $18 = 2 \times 9$, and $24 = 2 \times 12$.

A double time-signature sometimes occurs. In this case the higher compound serves merely to express the division of the simpler principal measure. Thus in the *G*-major Prelude (Well-temp. Clavichord, Bach) where the treble time-signature ($\frac{3}{4}$) indicates the division of the bass time-signature (C) into triplets of sixteenths. The $\frac{18}{16}$, in one of the "30 Variations" by the same composer, likewise indicates the division of the parallel time-signature $\frac{3}{4}$ into $3 \times 2 \times 3$ sixteenths. As an independent measure $\frac{18}{16}$ would be incorrectly employed here; for 18 should be divided, as an even measure, as 2×9 , that is, $2 \times 3 \times 3$.

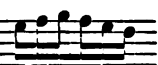

§ 88. *Table of the commonest Measures:*

Even (bipartite).	Odd (tripartite).
Simple: $\frac{2}{4}$ 	$\frac{3}{4}$ 
Compound: (2 > 2) $\frac{6}{8}$  (2 < 3) $\frac{6}{8}$ 	(3 × 3) $\frac{9}{8}$ 
Double compound: (2 × [2 > 3]) $\frac{12}{8}$ 	

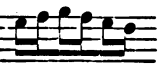

This table is to be written out from memory, and carefully memorized by counting aloud and emphasizing the strong counts.




§ 89. The measure is divided into counts, the count into subdivisions. It is the office of notation to render perfectly clear the articulation of the measures and counts by a choice of notes conformable to the counts, and by an appropriate employment of separative and combinatory signs.

E. g., if a quarter-note as count is to be divided into 2 groups of 3 notes each, we write and emphasize by secondary accents:

87.  = 

But if a quarter-note is to be divided into 3 groups of 2 notes each, we write and accent:

88.  = 

And as a sextuplet (§ 17) the same notes are written  without further distinguishing marks, whenever the correct phrasing as a double triplet  or sextuplet proper  is apparent from the context.

As a further example of such continuous division the following 24 sixteenth-notes in $\frac{3}{2}$ time may serve:



EXERCISE 24. (1) Which counts in the commonest kinds of measure (§ 88) are strong, and which weak?

(2) Accent

12 given eighth-notes as $\frac{3}{2}$ measure, $\frac{6}{4}$ measure, and $\frac{12}{8}$ measure;

6 given eighth-notes as $\frac{3}{4}$ measure, $\frac{6}{8}$ measure, etc. etc.;

24 sixteenths as $\frac{12}{8}$, $\frac{6}{4}$, $\frac{3}{2}$, and finally as \square in triplets.

This exercise is to be done in writing, at the piano with great emphasis of accent. and by counting aloud.

(3) Name the time of the following measures in like note-values:



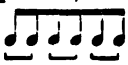
Relatively strong and weak Counts.—

Time-unit.—Syncopation.—Rhythm.—Rests.

Rare kinds of Measure.

§ 90. Every count and subdivision is relatively strong, compared with another which is less emphasized;

e. g., in $\frac{3}{4}$ time, the third eighth-note compared with the

fourth: 

1 2 3 4 5 6

Every count and subdivision is relatively weak, compared with another which is more emphasized; e. g., in $\frac{3}{4}$ time, the fourth eighth-note compared with the third.

In Ex. 89 above, in $\frac{3}{8}$ time, the simply accented sixteenths are relatively *strong*, i. e. as compared with those having no accent at all, etc. In the same example the triply accented sixteenths are relatively *weak*, as compared with the quadruply accented first sixteenth; whereas they are relatively strong in comparison with those doubly and simply accented.

The subdivisions of the measures (§ 87) stand in like relation to each other; those beginning with a stronger accent are relatively *strong* compared to others beginning with a weaker accent, thus in $\frac{4}{4}$ time, $\frac{6}{8}$ time, and $\frac{12}{8}$ time the first half as compared with the second — in $\frac{9}{8}$ time the first third compared with the last two. Relatively *weak* are the subdivisions beginning with a weaker accent as compared with those beginning with a stronger accent; thus in $\frac{12}{8}$ time the fourth subdivision of three eighth-notes compared with the third.

Counts, and subdivisions of counts or measures, are all included in the common term, Time-unit. E. g., in $\frac{4}{4}$ time, quarter-notes (as counts), eighths (as subd. of counts), and half-notes (as subd. of measure) are time-units.

§ 91. Tones beginning on (relatively) weak time-units and held over (relatively) strong ones, are called Syncopations.



All notes above marked 1 and 2 are syncopations, written at 1 in the form of a single note, at 2 represented by tied notes. (Let the pupil prove it in each case).

§ 92. *Rhythm* is the grouping of tone-units (note-values). Every rhythm is syncopated which accents the weak counts, even if not by syncopated notes. (In ternary division the tying of weak counts is no syncopation, but it syncopates the rhythm through the prolonged tone.)

§ 93. The lesser rests are combined to a greater when they form a measure or a time-unit.

Therefore wrong	$\dot{\text{z}} \dot{\text{z}} \dot{\text{z}}$	right	$\dot{\text{z}} -$
wrong	$\text{E} \text{J} \dot{\text{z}} \dot{\text{z}}$	right	$\text{E} \text{J} -$
wrong	$\text{J}^{\text{z}} \dot{\text{z}} \text{J} \dot{\text{z}} \text{J}$	right	$\text{J}^{\text{z}} - \text{J}$
wrong	$\dot{\text{z}} \text{J} \text{J} \text{J}$	right	$\dot{\text{z}} \text{J} \dot{\text{z}}$
wrong	$\dot{\text{z}} \text{J} \text{J}^{\text{z}} \text{J}^{\text{z}}$	right	$\dot{\text{z}} \text{J} \text{J}$

The dotted half-rest is only used when it is likewise a time-unit (subdivision of the measure), *e. g.*

$\text{J}^{\text{z}} - \text{J} \mid \text{J} - \mid \dot{\text{z}} - \text{J} \mid \text{J} - \mid \dot{\text{z}} - \text{J} \mid \text{J} - \text{J} \mid \text{J} - \text{J} \mid$

The time-unit of three eighths is rested regularly with $\dot{\text{z}}$ J, not with $\dot{\text{z}}$., yet the time-unit of three sixteenths with J.

Thus regularly $\dot{\text{z}} \dot{\text{z}} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid$
 $\dot{\text{z}} \dot{\text{z}} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid$
 $\text{J}^{\text{z}} - \dot{\text{z}} \text{J} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid \dot{\text{z}} \text{J} \text{J} \text{J} \mid$

Forbidden as wrong are the combinations of rests for *weak* with *strong*, or *weak* with *weak*, time-units. (*Weak—strong*, *weak—weak*, forbidden).

Therefore wrong	$\dot{\text{z}} \text{J} \text{J} \text{J}$	right	$\dot{\text{z}} \text{J} \text{J}^{\text{z}} \text{J}$
wrong	$\dot{\text{z}} \text{J} \dot{\text{z}} \text{J}$	right	$\dot{\text{z}} \text{J} \text{J} \text{J}$
wrong	$\dot{\text{z}} \text{J} -$	right	$\dot{\text{z}} \text{J} \dot{\text{z}} \dot{\text{z}}$
wrong	$\dot{\text{z}} \text{J} \dot{\text{z}}$	right	$\dot{\text{z}} \text{J} \text{J} \text{J}$
wrong	$\dot{\text{z}} \text{J} \dot{\text{z}} \text{J} \dot{\text{z}}$	right	$\dot{\text{z}} \text{J} \text{J} \text{J} \text{J} \text{J}$

Rests which form neither a measure nor a time-unit should not be combined.

Therefore wrong $\frac{1}{2}$ - $\frac{1}{2}$ right $\frac{1}{2}$ - $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 for $\frac{1}{2}$ is no subdivision of $\frac{1}{2}$
 wrong $\frac{1}{2}$ - $\frac{1}{2}$ right $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 for $\frac{1}{2}$ is no subdivision of $\frac{1}{2}$
 wrong $\frac{1}{2}$ $\frac{1}{2}$ right $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 wrong $\frac{1}{2}$ - $\frac{1}{2}$ - $\frac{1}{2}$ right $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 wrong $\frac{1}{2}$ $\frac{1}{2}$ right $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 wrong $\frac{1}{2}$ - $\frac{1}{2}$ right $\frac{1}{2}$ - $\frac{1}{2}$ $\frac{1}{2}$
 exceptionally $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ regularly $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

Nevertheless, in compound measures, when the counts are less than quarters, and too many rests would render the notation indistinct, combinations of *strong* with *weak* time-units are usual, even into dotted pauses; but not the reverse combination, *weak* with *strong*.

Good $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ bad $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ Beethoven: $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 Good $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ bad $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 Good $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ not so good $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
 Good $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ bad $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

Each of the cases given is to be proved.

EXERCISE 25. Write in $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ time numerous measures with different note-values, e. g.

$\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ etc.
 $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ etc.
 $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ etc.

It is well at first to write out this important exercise with from one to eight notes in a measure, excluding rests,

triplets, and notes smaller than sixteenths; then to write out a small number of measures in rests; and finally a few measures with intentional syncopations.

Each measure must if possible be so written, that the time can be recognized without foregoing time-signature. To this end aids a separation of the subdivisions of the measures (§ 87) and counts by the proper employment of dots and strokes [hooks stroked together], which join whatever belongs to any one count or subdivision, and exclude all else. Shorter strokes on individual notes (§ 12) point either towards that dotted note with which they combine to form a higher note-value, or towards the undotted note to whose count they belong.

 because  because  because  because  because  because  because  because  because 

Thus we avoid in $\frac{6}{8}$ $\frac{9}{8}$ $\frac{12}{8}$ time the use of undotted half-notes, in order not to efface the boundaries of the subdivisions.

91.  not 


 not 


The tie between notes of like pitch (§ 14) is not used for full measures or time-units, or for simple syncopations.

Wrong :  right 

Wrong  right 

Not usual  because simple syncopation 

Right :  because the second time-unit is divided.

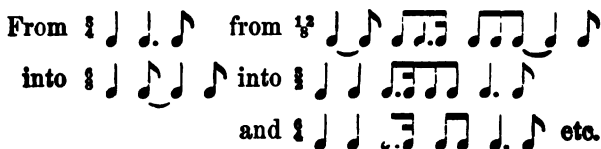
Right :  because binary with complicated syncopation.

Notes sounding together should be written under each other and, when of different value, exactly in the place where they sound together.



For pupils of quick perception two useful accessory exercises may be added here.

(1) Transpose tone-units from one measure into another of like note-value, *e. g.* from $\frac{3}{4}$ into $\frac{6}{8}$; from $\frac{12}{8}$ into $\frac{3}{4}$ and $\frac{6}{8}$. Here the tone-units remain the same, but are differently written in accordance with the conditions of the different measures.



(2) Form rhythms with initial arsis (§ 85) equal in value to a whole measure, *e. g.*



This exercise is important, because the ear does not count the measure from bar to bar, but from commenced to completed note-value. Therefore rule § 85.

§ 94. Exceptionally may be found in musical compositions fivefold and sevenfold measure, as $\frac{5}{4}$, $\frac{5}{8}$, $\frac{7}{8}$. As a rule they should be accented as binary measure.

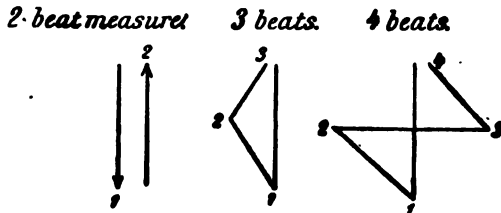


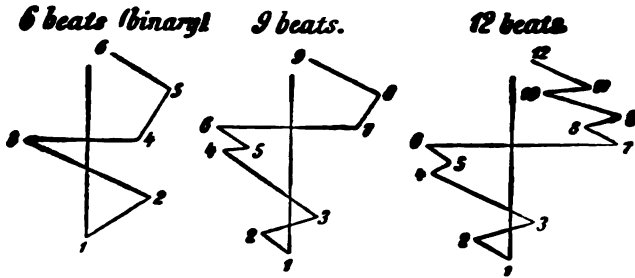
With such rare and highly difficult measures the composers clearly indicate the inner articulation by the mode of notation. The most popular examples of 5-part measure are the folk-song "Prinz Eugen", and the tenor aria in the opera "La dame blanche", Act 2, Scene 1.

The combining of really different kinds of measure is founded on the equality of their primary division; *e. g.* the combining of $\frac{6}{4}$ and $\frac{12}{8}$ on their common binary division. (Chopin, *F-minor Étude*). The extremely rare combination of different *simple* measures is made possible by the coincidence of their bars at certain intervals. (Mozart, "Don Juan," Ball-scene).

§ 95. The execution of musical compositions is regulated by audible or inaudible counting (the former with beginners, the latter on the part of participants in *ensemble* performances), and by *visibly marking* the beats by the aid of a baton (beating time), as done by a conductor of an *ensemble* performance. As a rule, the *counts* are marked in C four, in G two, in $\frac{12}{8}$ time twelve. In a very slow movement the subdivisions of counts are marked, *e. g.*, in $\frac{3}{4}$ time, 6 eighths rather than 3 quarters, the weak subdivisions being then marked by "and". In a very rapid movement only the *strong* counts are marked, thus in $\frac{12}{8}$ time ($4 \times \frac{3}{8}$, comp. § 87) *four* instead of *twelve*.

The motions of the baton in the commonest measures are nearly as below:





The chief rule is, that the first beat is directed downward, the last upward, the others as much as possible toward the side.

Should the number of beats be augmented, the original conformation must be adhered to as far as possible.

V.

Tempo.

§ 96. As the note-values only indicate the relative length of tones (§§ 10, 86), nothing is settled by the time-signature in regard to the degree of rapidity or slowness of a piece. This must be fixed by a further special distinguishing mark.

The degree of rapidity or slowness in movement of a composition is called the *Tempo*. The tempo is indicated by a term borrowed, as a rule, from the Italian. With German composers, however, the (formerly infrequent) employment of German terms is becoming more common.

The entire signature of a composition thus includes four elements, namely

Clef, Key, Time, and Tempo.



The chief Tempi are:

Presto. Allegro. Andante.* Adagio.
 Very rapid. Rapid. Moderately slow. Slow.

More rapid Tempi than Presto are:

Prestissimo. Prestissimo possibile.
 (§ 74.) As rapid as possible.

Tempi in part corresponding to Adagio, in part still slower, are:

Lento. Larghetto. Largo. Lentissimo. Adagissimo.
 Slow. Rather broad. Broad. (§ 74.) (§ 74.)

Medium grades between Presto and Allegro are:

Quasi Presto. Presto non troppo. Allegro assai. Allegro molto.
 (§ 74.)

Between Allegro and Andante:

Allegro moderato. Allegretto. Andantino. Andante con moto.
 Moderately rapid. The same, The same, With moderate
 but rather but slower rapidity.
 slower than than
 Allegro Allegretto.
 moderato.

Between Andante and Adagio:

Adagietto. Andante sostenuto. Adagio non troppo.
 (§ 74.) Moderately slow, but held back. (§ 74.)

* Literally "walking", in contradistinction to "running"

Tempo giusto signifies the same as **Allegro giusto**, with due rapidity, quite rapidly. (§ 57.)

Marks like M. M. ♩ = 124, etc., which are often conjoined with the tempo-mark, refer to the Metronome constructed by Mälzel, an instrument which audibly marks the rhythm, and thus precisely sets the tempo. The slide is set on the given number, and each beat which it makes counts for one note of the value indicated.

Lately the attempt has been made to hit the happy medium between the absolute, but too rigid, tempo-indication of the metronome, and the inexactness of the bare word, by prescribing tempo and note-value; for instance, **Allegretto** ♪ means "rather fast, count eighths"; according to this the tempo **Allegretto** ♩. ("rather fast, count three eighths") would be thrice as rapid.

VI.

Execution.




§ 97. The execution of compositions is regulated by certain signs and words, which are included under the term **Marks of Execution**. These marks refer to


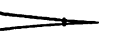
- (a) the degree of tone-power (dynamic signs),
- (b) the modifications of measure and tempo (metrical and rhythmical signs),
- (c) the delivery,
- (d) the expression in general.

(a) *Tone-power.*

§ 98. *p* (piano) *soft*, *pp* (pianissimo) *very soft*, *ppp* as *soft as possible*, *mp* (mezzo piano) *half soft*.

f (forte) *loud*, *ff* (fortissimo) *very loud*, *fff* as *loud as possible*, *pf* (più forte, poco forte) [§ 74] obsolete, *mf*

(*mezzo forte*) *half loud*, *sf*, *sfz*, *fz* (*sforzato*) (for a single tone or chord) *emphasize* by stronger accent; *sff* *emphasize very strongly*, *sfp* *strong accent, instantly decreasing to piano*; *marcato* *marked* (for individual notes; sign  *weakest*,  *stronger*,  *strongest degree* = *marcatissimo*).

crescendo (abbr. *cresc.*, *cr.*)  *growing louder*; *decrescendo* (*decresc.*, *decr.*)  *growing softer*, *diminuendo* (*dim.*) *growing softer*; *rinforzato*, *reinforced*, *louder in tone*, has the same signification for whole phrases that *sfz* has for single tones; etc.

(b) *Modifications of Measure and Tempo.*

§ 99. *Recitativo*, in the style of a narration, declaimed without time or tempo; *ad libitum*, a *piacere*, tempo to be taken at will; a *capriccio* at pleasure; tempo *rubato* the tempo retarded or accelerated at will.

accelerando *accelerated*, *stretto* *rapidly accelerated* (*Stretta*, a movement in continually accelerated tempo); *ritardando*, *rallentando*, growing slower.






If the effect of such expression-marks is to be annulled, and the original tempo resumed, we write a tempo, in tempo, tempo primo, in the (*original, first*) tempo.



When space permits, the dynamic marks are written below the staff, the metrical above it.

(c) *Delivery.*

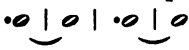
§ 100. The chief contrast in delivery, and one employed by voices and all instruments, is formed by the *staccato* and *legato*.

Staccato, *detached*, is a mode of execution which sounds the tones so briefly that they are separated by minute pauses of indeterminate length. The degrees of *staccato* from least to greatest are indicated by:

 over,  under the notes,
 over or under the notes,
 over,  under the notes.

Legato, *bound, connected* is that mode of execution which avoids even the slightest break between two consecutive tones. The usual sign for legato is a slur  over or  under the connected notes, regularly towards the heads of the notes.

The first of such notes connected by a slur should as a rule be slightly emphasized, the last lifted in a lightly pronounced manner. This is particularly the case with groups of a few notes of low value.

A dot just before a prolonged note signifies that it is to be perceptibly detached from that preceding it.  (Mozart, C-major Symphony, Finale).

Other modes of execution are referable to the technique of special instruments.

(d) *Expression.*

§ 101. To facilitate apprehension by the performer, composers provide for whole pieces or individual passages directions in musical terms referring to the expression. *E. g.*

dolce gently, dolcissimo very gently, dolente plaintively, vivace lively, con fuoco with fire, con furio, furioso furiously, energico energetically, amabile, con amabilità amiably, grazioso gracefully, appassionato passionately, maestoso majestically, and many others.

REMARK. The completion of Sections V and VI is left to practical teaching, and to the employment of musical lexicons, or still better. Italian dictionaries.

VII.

The Science of Intervals.

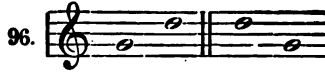
The eight chief Intervals.

§ 102. An Interval is the difference between two tones in regard to pitch. The two tones, which are considered with reference to their distance apart, are also termed an Interval. The latter signification, although derivative, is the commoner in practice.

It is indifferent whether both tones sound together, as



or successively, as



In determining the interval, the succession of root-tones is taken as a measure. One tone is taken as first, counting from this to the other along the root-tones. The key-signature need not be taken into account. *E. g.*, given



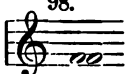
the root-tones are to be counted from the lower to the higher tone inclusive; *g* is the first, *a* the second, *b* the third, *c* the fourth, and *d* therefore the *fifth* tone. The number of steps of root-tones thus found gives the interval its name. That in the above example is named, being the fifth step, the *Fifth*.

All intervals of tones sounding together, and intervals of all chords, are read and named from below upwards.

The Interval

between 2 tones on the same degree is called:

98.

Prime  1 (written abbreviation)

between 2 consecutive root-tones:

Second  2

from the first to the third degree:

Third  3

from the first to the fourth:

Fourth  4

from the first to the fifth:

Fifth  5

from the first to the sixth:

Sixth  6

from the first to the seventh:

Seventh  7

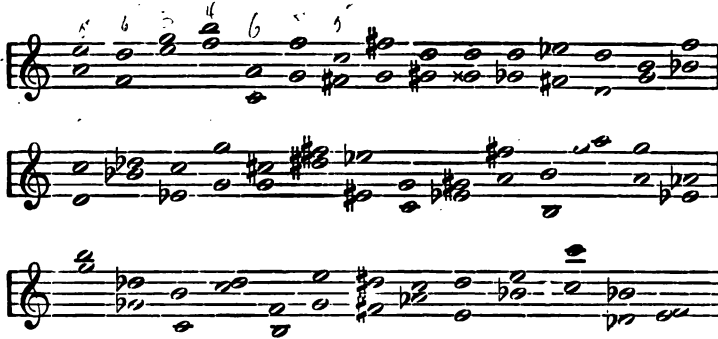
from the first to the eighth:

Octave  8

EXERCISE 26. The following intervals are to be named accordingly.

N. B. In this and all following practice-exercises *without bars*, the chromatic signs affect only those notes before which they are set. (Comp. § 30, Exercise 6.)

Chromatic signs are given here merely to remind the pupil, that in determining the intervals they need not be taken into consideration.



§ 103. Find, to a given tone of an interval, the other tone.

Count, beginning with the root-tone of the given tone, the number of degrees corresponding to the desired interval. The degree so found, and all possible chromatic elevations and depressions of the same, is the tone sought.

Example. What is the Sixth of $e\flat$? The root-tone of $e\flat$ is e ; from this, as first, count up to the sixth degree, — $e\ f\ g\ a\ b\ c$, ending on c . But $c\sharp$, $c\flat$, $c\natural$, and $c\flat\flat$ are also the sixth required, because elevations or depressions have no influence upon these general definitions of intervals.

In forming intervals *below*, this condition must be expressed in the question; *e. g.*, what is the Fifth below c ? Answer, f . Where this condition is not expressed, the interval "above" is always understood.

What is the Third below a ? Count down, $a\ g\ f$. Answer, f , or $f\sharp$, $f\flat$, etc.

The formation of intervals below is very important in practice, especially for *sight-singing*.

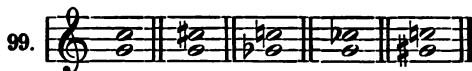
EXERCISE 27. Similar questions are to be put, until answered without hesitation.

Expanded and Contracted Intervals.

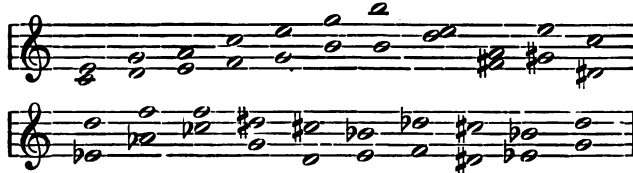
§ 104. An interval is *expanded* by raising its higher tone or lowering its lower tone.

An interval is *contracted* by lowering its higher tone or raising its lower tone. (Notice here § 32).

Example. A Fourth, with its expansions and contractions by a semitone.



EXERCISE 28. The following intervals are to be (1) expanded, (2) contracted, by a semitone in both ways. (Likewise in writing and at the piano.)



If an interval is to be expanded by a whole tone we can, besides lowering the lower tone, or raising the higher, by a whole tone, also proceed by raising the higher, and at the same time lowering the lower, by a semitone. *E. g.*



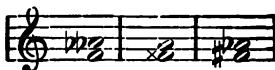
expanded by a whole tone:



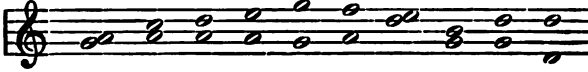
To contract by a whole tone the procedure is reversed;



contracted by a whole tone:



EXERCISE 29. The following intervals are to be (1) expanded, (2) contracted, by a whole tone in three ways. (Also in writing and at the piano.)



Intervals of the Major Scale.

§ 105. We begin here by determining the intervals which the degrees of the major scale mutually form, because this method has proved to be a good introduction to the following exact determination of intervals in general.

EXERCISE 30. (1) Name Seconds to all degrees of a major scale. *c d, d e, e f, f g, g a, a b, b c.* Are there differences between these? Some embrace a whole tone, others a half-tone.

Seconds of a whole tone are called *major* seconds, of a half-tone *minor*.

Form the minor seconds of major keys in the circle of fifths.

Form the major seconds of major keys in the circle of fifths.*

(2) Name the Thirds. *c e, d f, e g, f a, g b, a c* Differences etc. (as above).

Thirds embracing 2 whole tones are called *major* thirds, having one whole and one half-tone, *minor* thirds.

Form the major thirds (as above).

Form the minor thirds (as above).

(3) Name the Fourths (as above).

Fourths embracing 2 whole and 1 half-tone are called *perfect*; having 3 whole tones, *augmented*. In the major scale there is but one augmented fourth.

* The notes of seconds are not written *over*, but *beside* and touching each other. Their chromatic signs are set one *before* the other. — The Circle of Fifths is to be constructed according to § 53, p. 46, line 11.

Form the augmented Fourth. (as above).

Form the perfect Fourths (as above).

The augm. fourth is called the Tritone (three-tone).

(4) Name the Fifths.

Fifths having 3 whole and 1 half-tone are *perfect*, having 2 whole and 2 half-tones, *diminished*. In the major scale there is but one diminished fifth.

Form the dimin. Fifth (as above).

Form the perfect Fifths (as above).

(5) Name the Sixths.

Sixths having 4 whole tones and 1 half-tone are *major*, having 3 whole and 2 half-tones, *minor*.

Form the major Sixths (as above).

Form the minor Sixths (as above).

(6) Name the Sevenths.

Sevenths having 5 whole tones and 1 half-tone are *major*; having 4 whole and 2 half-tones, *minor*.

Form the major Sevenths (as above).

Form the minor Sevenths (as above).

These Circles of Fifths are to be constructed from memory both before and after the written exercises.

More exact Determination of the Intervals.

§ 106. According to § 102, the *general* determination of intervals is founded on the *succession of root-tones*. Thus it happens, that intervals of very different width bear like names. For instance, according to their similar number of degrees, we name the intervals



sixths, although they differ by two whole tones.

The difference in width of like-named intervals is expressed by the adjectives *major*, *perfect*, *minor*, *diminished*,

augmented, which we have already applied in § 105 to intervals of the major scale, and shall now extend to all intervals.

They are set before the interval-name, as *perfect* fifth, *diminished* seventh. We abbreviate them by writing their initial letters before the figure denoting the interval, thus: p. 1, maj. 2, min. 3, d. 5, a. 4. Their use is regulated by the following rules:

§ 107. I. An interval is called *major* or *perfect*, when its higher tone lies in the major scale of the lower.

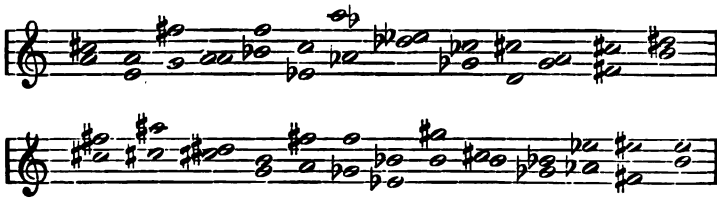
And in this case are *major* the Second, Third, Sixth, and Seventh. (Beginners can easily learn this by remembering, that these names begin in the alphabet with the consecutive letters S T).

Perfect are in this case the Prime, Fourth, Fifth and Octave.

REMARK. This rule is applied to the perfect Prime only in a figurative sense, its two tones being really of the same pitch.

The perfect Prime is the Unison. The major Second is the Whole Tone.

EXERCISE 31. Determine the following intervals, some being perfect, some major:



§ 108. II. An interval is called *minor*, when it is a semitone less than *major*.

Thus only Seconds, Thirds, Sixths, and *Sevenths*, may be called *minor*, they alone being called *major*. In determining *given* intervals, *minor* intervals may be recognized

§ 110. IV. An interval is called *augmented* when it is a semitone greater than *major* or *perfect*.

Augmented intervals may be recognized from the fact, that the higher tone is a semitone too high to form a major or perfect interval.

EXERCISE 34. Determine the following intervals:



The *Augmented Prime* is the *Chromatic (lesser) Semitone*.

The *Augmented Fourth* is the *Tritone*.

We perceive, that the major and perfect intervals are determined by the major scale, the others according to the major and perfect ones.

Table of Derivation of Intervals.

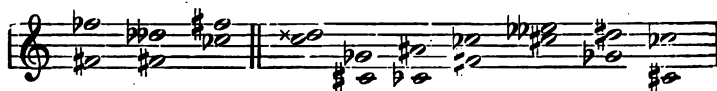
$\frac{1}{2}$ tone + **	augmented	
	major	perfect
$\frac{1}{2}$ " — **	minor	diminished
$\frac{1}{2}$ " —	diminished	

* Remember, that the intervals are determined from the *lower* tone (§ 102), whether preceding or following the higher.

** + signifies here *greater*, and — *less* (i. e. than major or perfect).

§ 111. For still greater intervals than augmented, and still less than diminished ones, the expressions doubly or triply augmented and diminished are employed.

First is now given a doubly-diminished Octave, a doubly-diminished Sixth, and a doubly-augmented Fourth. The pupil himself should determine the remaining intervals.



Such intervals are extremely rare; *triply* augm. or dim. intervals would seem musically impossible.

§ 112. *One tone of any named interval being given, find the other tone.*

First construct the perfect or major interval according to the major scale, and then alter it, in conformity with the question, by augmenting or diminishing.

EXERCISES.

General Presentation.

The *lower* tone of any named interval being given, to find the *higher*.

Run up the major scale of the given tone to the corresponding degree. The desired interval will thus be obtained as *major* or *perfect*.

Now, when neither a major nor a perfect interval is required, the tone found is to be so far raised or lowered that it corresponds to the interval demanded.

Examples.

What note is the augmented Sixth of d?

The sixth degree in *D*-major is b; b is therefore the *major* sixth of d.

But, as the augmented sixth is required, the note b now obtained must be raised by a semitone, thus becoming b#, the required augmented sixth of d.

The *higher* tone of any named interval being given, to find the *lower* tone.

Consider the given tone as the corresponding degree of a major scale. The key-note of this scale forms, with the given tone, the desired interval as *major* or *perfect*.

Now, when neither a major nor perfect interval is required, the tone obtained is to be *raised* if the interval be too great, and *lowered* if the interval be too small.

What note is the diminished fourth below $b\flat$?

The tone $b\flat$ is the fourth of *F*-major, whose key-note f is therefore the perfect fourth below $b\flat$.

But, as the diminished fourth is required, the *lower* tone f must be raised by a semitone, thus becoming $f\sharp$, the diminished fourth below $b\flat$. (See § 104.)

EXERCISE 35. Numerous like questions are to be put and answered, for which purpose the examples to Exercises 31—34 may be used.

EXERCISE 36. Form, to key-notes of major scales, the perfect, major, minor, augmented and diminished intervals above; to root-tones, and $f\sharp$ and $b\flat$, the same below. — Thus to c : perfect, $c\ f\ g\ c$; major, $d\ e\ a\ b$; minor, $d\flat\ e\flat\ a\flat\ b\flat$; diminished, $d\flat\flat\ e\flat\flat\ f\flat\ g\flat\ a\flat\flat\ b\flat\flat\ c\flat$; augmented, $c\sharp\ d\sharp\ e\sharp\ f\sharp\ g\sharp\ a\sharp\ b\sharp\ c\sharp$. The same below. — Thus: perfect, $c\ g\ f\ c$; major, $b\ a\flat\ e\flat\ d\flat$; minor, $b\ a\ e\ d$; diminished, $b\sharp\ a\sharp\ g\sharp\ f\sharp\ e\sharp\ d\sharp\ c\sharp$; augmented, $c\flat\ b\flat\flat\ a\flat\flat\ g\flat\ f\flat\ e\flat\flat\ d\flat\flat\ c\flat$. Where double chromatic signs do not suffice, omit interval, *e. g.* with the diminished seventh (upwards) on $C\flat$.

§ 113. All Intervals being derived from major and minor, and these from the major scale, a special difficulty arises when the lower tone of an interval is not the key-note of a major scale. For instance, if we have to determine the interval

104.

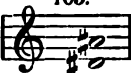




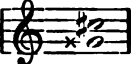
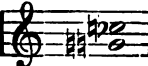
no major scale exists by whose aid this could be done. In such a case one might, to be sure, construct the needed scale by the formula $1\ 1\ 1\frac{1}{2}\ 1\ 1\ 1\frac{1}{2}$ (§ 37), and then proceed to determine the interval; but to this tedious process the following is preferable:

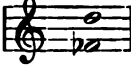
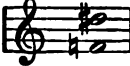
1. Raise or lower the lower tone so far, that it becomes the key note of a major scale.

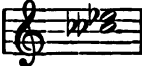
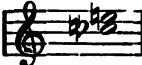
2. Raise or lower the higher tone by as much as the lower. The interval so obtained is exactly equal to that which is to be determined, and therefore to be similarly named.

105.

Examples. Given:  By lowering by a semitone $d\#$ becomes d , the key-note of *D*-major; $a\#$ similarly lowered becomes a ,  or perfect fifth, therefore  likewise.

Given:  Both tones lowered by a whole tone  = diminished fourth. Consequently the given interval likewise.

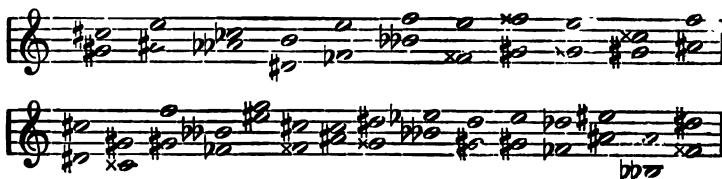
Given:  Both raised by a semitone — , consequently augmented sixth.

Given:  Both raised by a semitone — , consequently augmented third.

In all cases, sharp tones are to be *lowered*, flat tones to be raised, to become key-notes of major scales.

This procedure is Transposition. The interval is thus transposed from an unused into a usual major key, without quitting the degrees

EXERCISE 37. Designate the following intervals of this kind.



In like manner we proceed with the construction of such intervals, the higher or lower tone being given. *E. g.*, if the major third of $d\sharp$ be required, which is not the key-note of any major scale, we erect it upon d , a semitone too low, and raise the note obtained by a semitone. The major third of d being $f\sharp$, that of $d\sharp$ is $f\sharp$.

What note is the minor third of $a\sharp$? That of a , a whole tone too low, is c ; that of $a\sharp$ (a whole tone higher) is consequently $c\sharp$.

What note is the major sixth of $f\flat$? That of f is d , of $f\flat$ therefore $d\flat$.

What note is the perfect fourth of $e\flat$? That of e (a semitone too low) is $a\flat$; of $e\flat$ therefore $a\flat$.

What note is the minor third *below* $c\flat$? $C\flat$ is not minor third in any major scale, therefore the procedure in § 112 is not applicable. Erect, instead, the minor third below c , a semitone too high, and then lower it by a semitone to $a\flat$.

The enharmonic exchange can also be employed in determining such intervals, the pitch then remaining unaltered, though the degree is changed. For example, we can transform $g\sharp$ - $C\sharp$ into $a\flat$ - $d\flat$. However, this method is roundabout and unusual. It is nevertheless well to perform this enharmonic exchange with the intervals in Exercise 37, taking care to treat both tones of each interval exactly alike, as the number of degrees in the interval must remain unchanged. It would be wrong, for instance, to change

fb-e into *e-fb*, because this would make 9 degrees out of 7; correct would be *e-dx*.

EXERCISE 38. Construct every interval above and below to every root-tone, sharp tone, and flat tone to the limits of musical notation.

The major and minor Seconds are of special importance here, although they coincide in construction with the diatonic half and whole tones (§ 33). Whenever feasible, these intervals should also be practiced by singing them to the tone-names. At least part of the exercises should be written out.

Augmented Primes (chromatic semitones) above and below, to root-tones: *f f[♯], f f^b; c c[♯], c c^b*, etc., around the circle of fifths to *b b[♯], b b^b*;—**to sharp tones:** *f[♯] f^x, f[♯] f*, etc., around the circle of fifths to *b[♯] b^x, b[♯] b*;—**to flat tones:** *f^b f, f^b f^{bb}*, etc., around the circle to *bb b, bb b^{bb}*.

Minor Seconds (diatonic semitones) as above: *f g^b, f e; c d^b, c b*, etc.

Major Seconds (whole tones) as above: *f g, f e^b, c d, c b^b*, etc.

Diminished Seconds (enharmonic exchanges) as above: *f g^{bb}, f e[♯]*, etc.

Augmented Seconds as above: *f g[♯], f e^{bb}; c d[♯], c b^{bb}*, etc.

All other intervals to be treated in like manner.

EXERCISE 39. Intervals of the Minor Scale.

While in § 105 the intervals of the major scale were explained in advance, those from all degrees of the minor scale are explained here at the close.

Harmonic Minor Scale.

Minor seconds of all harm. minor scales. (Three.) N. B.

Major seconds. (Three.)

Augmented seconds. (One.) N. B.

Minor thirds. (Four.)

Major thirds. (Three.)

Perfect fourths. (Four.)

Diminished fourths. (One.) N. B.

Augmented fourths. (Two.) N. B.

Perfect fifths. (Four.)

Diminished fifths. (Two.) N. B.

Augmented fifths. (One.) N. B.

Major sixths. (Four.)

Minor sixths. (Three.)

Major sevenths. (Three.) N. B.

Minor sevenths. (Three.)

Diminished sevenths. (One.) N. B.

N. B. Intervals so marked are preferable for written exercises.

The ascending and descending Melodic Minor Scale can also be taken up in like manner.

Determine keys to which intervals in Exercises 31—34 belong. Some intervals belong to various keys, some to modulatory keys (§ 47), some to no key at all (*e. g.* augmented sixths).

Of intervals, as of scales, one can gain complete mastery only by singing. First sing a tone; then designate any interval to be struck above or below the same, and sing it to the name of the tone. *E. g.*



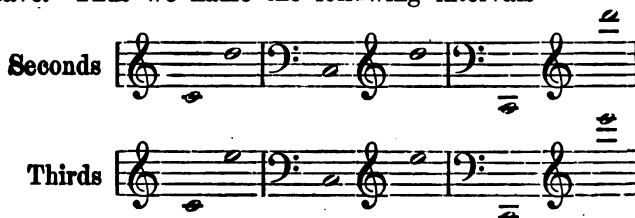
How does the perfect fifth below sound? Sing:



Choose first for such exercises the perfect and major intervals; when these can be taken with certainty, the minor, then the diminished, and finally the augmented intervals. From this exercise follows the other, to recognize intervals *heard*. From both, results the ability of mental perception of intervals *read*. without singing or hearing them.

The Greater Intervals.

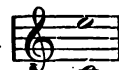
§ 114. The intervals which are greater than the octave are named just as if they were within the compass of an octave. Thus we name the following intervals





“Prime” alone is exclusively the designation for two tones of the same root-tone on the same degree of the staff.


Where it is requisite to indicate precisely the position of such wide intervals, we say, *in the second octave, third octave, etc.*, if we do not prefer (acc. to § 7) to name distinctly the octave to which each tone belongs. Thus we have seconds above in the second, third, and fifth octave. But we can name them more precisely seconds of the *one-lined* and *two-lined*, of the *small* and *two-lined*, of the *great* and *three-lined* octaves. We likewise find occasion to give these greater intervals special names. Thus the second in the second octave is named, from its *nine* degrees, the




the Third in the second octave the Tenth  10 degrees

the Fourth, Eleventh  11 degrees




the Fifth, Twelfth  12 degrees

the Sixth, Thirteenth  13 degrees

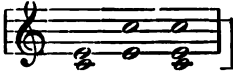
the Seventh, Fourteenth  14 degrees

the Double-octave, Fifteenth  15 degrees

The intervals are treated, as regards their more precise determination, exactly like the corresponding ones within an octave. Even their names, like those of intervals within the octave, may be transferred to still wider intervals.

E. g., we call  the Ninth of , Second of 

Complementary or Inverted Intervals.

§ 115. Intervals, which when united form an octave, are called complementary. Thus the major third and minor sixth  form, when united, an octave, and are therefore complementary intervals.

They are generally called *Inversions*, because one is formed from the other through *inversion*; i. e. by *raising the lower tone*, or *lowering the higher tone*, by an octave.

110.  or  inverted

111.

												
p 1	a 1	d 2	min 2	maj 2	a 2	d 3	min 3	maj 3	a 3			
p 8	d 8	a 7	maj 7	min 7	d 7	a 6	maj 6	min 6	d 6			

a 5 p 5 d 5 a 4 p 4 d 4 a 3 maj 3 min 3 d 3

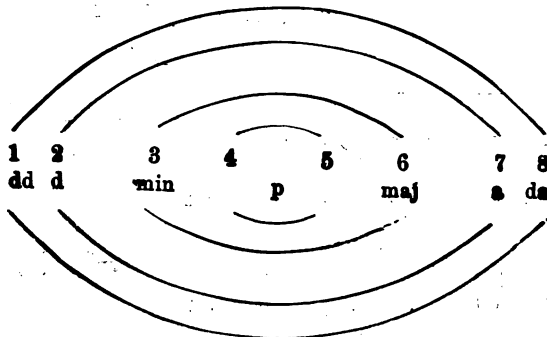
a 2 maj 2 min 2 a 1 p 1

Complementary or inverted intervals are:

Primes and Octaves
 Fourths and Fifths
 Seconds and Sevenths
 Thirds and Sixths.

Through inversion





major intervals become minor		
minor	"	major
dimin.	"	augm.
augm.	"	dimin.
perfect	remain	perfect.



Determination of Intervals according to Half and Whole Tones.

§ 116. Arrangement of the intervals according to their absolute width in half-tones.

			112.
0	Half-tone:	perfect diminished Prime Second	
1	"	augmented minor Prime Second	
2	Half-tones:	major diminished Third Prime	
3	"	augmented minor Second Third	
4	"	major diminished Third Fourth	
5	"	augmented perfect Fourth doub. dimin. Fifth	
6	"	augmented diminished Fourth Fifth	
7	"	perfect diminished Sixth doub. augm. Fourth	
8	"	augmented minor Fifth Sixth	
9	"	major diminished Sixth Seventh	

10	Half-tones:	augmented minor doub. dimin.	Sixth Seventh Octave	
11	"	major diminished	Seventh Octave	
12	"	augmented perfect diminished	Seventh Octave Ninth	
13	"	augmented minor	Octave Ninth	

etc.

Recite the above table with other fundamental notes, (for instance *d*, or *a*). This table proves, that an interval can not be exactly determined by stating its width in semitones.

The reason for this inexactness lies in the dependence of the denomination of intervals upon the succession of root-tones, of which the table takes no account. Therefore, the width of intervals must be so stated as to indicate the number of degrees included. This may be done

either by placing the two statements side by side (*e. g.*, an interval including *one* degree of 0 semitones can be only the perfect Prime; an interval including *two* degrees of 0 semitones can be only the diminished Second; an interval including *three* degrees of 2 semitones can be only the diminished Third);

or by determining the intervals according to *diatonic* whole and half tones, *i. e.* major and minor Seconds (*e. g.*, an interval of 3 whole tones, if I regard each of these whole tones as a Second, can be only the interval of

1 2 3

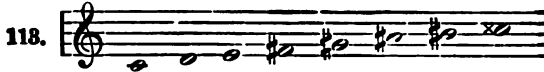
the augmented Fourth; as *c-d*, *d-e*, *e-f#*; an interval including two whole tones and one semitone, *i. e.* two major seconds and one minor second, can be only the

perfect Fourth, as *c-d, d-e, e-f*). For the following cases this method of determination is insufficient, partly because they include the chromatic semitone (augmented Prime), partly because they are narrower than the minor second:

The augm. Prime = one chromatic semitone,
 the augm. Second = three semitones,
 the augm. Third = one whole tone + three semitones,
 the doub. augm. Fourth = two whole + three semitones,
 the perfect Prime and dimin. Second, whole width = 0.

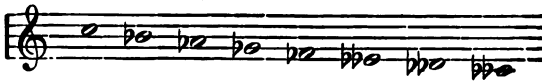
(1) Of whole tones consist:

ascending

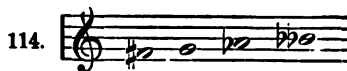


major	Second	1 whole tone
major	Third	2 " tones
augmented	Fourth	3 " "
augmented	Fifth	4 " "
augmented	Sixth	5 " "
augmented	Seventh	6 " "
doub. augm.	Octave	7 " "

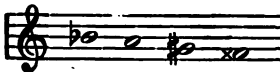
descending

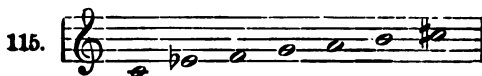


(2) Of half-tones consist:

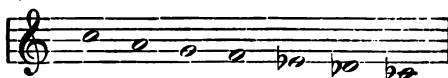
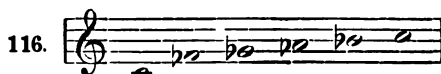


minor	Second	1 semitone
diminished	Third	2 semitones
doub. dimin.	Fourth	3 "

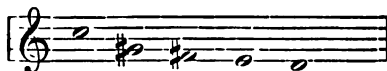
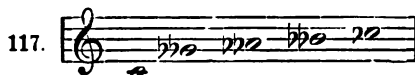


(3) Of whole tones and one semitone consist:

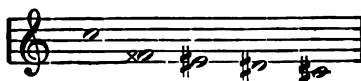
minor	Third	$1\frac{1}{2}$
perfect	Fourth	$2\frac{1}{2}$
perfect	Fifth	$3\frac{1}{2}$
major	Sixth	$4\frac{1}{2}$
major	Seventh	$5\frac{1}{2}$
augmented	Octave	$6\frac{1}{2}$

**(4) Of whole tones and two semitones consist:**

diminished	Fourth	1 whole, 2 half
diminished	Fifth	2 whole, 2 half
minor	Sixth	3 whole, 2 half
minor	Seventh	4 whole, 2 half
perfect	Octave	5 whole, 2 half

**(5) Of whole tones and three semitones consist:**

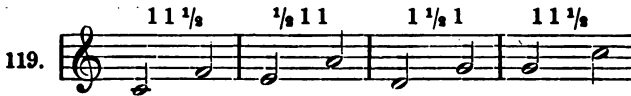
doub. dimin.	Fifth	1 whole, 3 half
diminished	Sixth	2 whole, 3 half
diminished	Seventh	3 whole, 3 half
diminished	Octave	4 whole, 3 half



If an interval given only in whole and half tones be written out, the order of succession of the whole and half tones is immaterial. *E. g.*, the Perfect Fourth = 2 whole, 1 half.—Various presentation:



The solution by either of these methods is correct. In our example, the first Fourth belongs to the keys of *C*-major, *F*-major, and *a*-minor; the second to *Bb*-major, *Eb*-major, and *c*-minor; the third to *Ab*-major, *Db*-major, and *bb*-minor. Here a difference between like-named intervals on different degrees of the diatonic scale is manifest, whose musical significance is felt especially in singing the same, *e. g.* with the following four Fourths in *C*-major:



In this method of determination we also possess a new device for constructing such intervals as can not be created according to the usual major scales; *e. g.*, the perfect Fourth

$$\begin{array}{c} 1 \quad 1 \quad \frac{1}{2} \\ \hline (1 \ 1 \ \frac{1}{2}) \text{ of } f\sharp = f\sharp \ g\sharp \ a\sharp \ b\sharp \end{array}$$

By the situation of the semitones the so-called *genera* of intervals are distinguished, particularly that cited above at (3), and the p 8; for instance, three genera of (perfect) Fourths (see No. 118 above), four genera of perfect Fifths, seven genera of Octaves.

The seven genera of Octaves (the *Modes*), which become important in the higher branches of musical science, are called

<i>first</i> or <i>Ionian</i>	1 1 $\frac{1}{2}$ 1 1 1 $\frac{1}{2}$	<i>c d e f g a b c</i>
<i>second</i> <i>Dorian</i>	1 $\frac{1}{2}$ 1 1 1 $\frac{1}{2}$ 1	<i>d e f g a b c d</i>
<i>third</i> <i>Phrygian</i>	$\frac{1}{2}$ 1 1 1 $\frac{1}{2}$ 1 1	<i>e f g a b c d e</i>

<i>fourth</i> or <i>Lydian</i>	1 1 1 $\frac{1}{2}$ 1 1 $\frac{1}{2}$ f g a b c d e f
<i>fifth</i> <i>Mixolydian</i>	1 1 $\frac{1}{2}$ 1 1 $\frac{1}{2}$ 1 g a b c d e f g
<i>sixth</i> <i>Aolian</i>	1 $\frac{1}{2}$ 1 1 $\frac{1}{2}$ 1 1 a b c d e f g a
<i>seventh</i> <i>Hypophrygian</i>	$\frac{1}{2}$ 1 1 $\frac{1}{2}$ 1 1 1 b c d e f g a b

EXERCISE 40. (1) Construct, according to their width in whole and half tones, intervals above and below, and determine their key. (2) Construct the "genera" of the min. 3, p. 4, p. 5, maj. 6, maj. 7, and p. 8, both as a formula in figures and exercise in notes. (3) Construct series of tones, separated regularly by a fixed interval, to the limits of musical notation.

(1) Perfect fifths from *fbb* to *b×* (the whole compass of tones in the circle of fifths; *fbb cbb gbb dbb abb ebb bbb fb cb gb db ab eb bb c g*, etc., to *b×*; descending in reverse order.

(2) Perfect fourths ascending from *b×* to *fbb* (entire circle of fourths); descending reversely.

(3) Major thirds ascending from *fbb* to *a×*, *cbb* to *e×*, *gbb* to *b×*, *dbb* to *d×*; descending reversely.

(4) Minor sixths reversely.

(5) Minor thirds, ascending from *b×* to *cbb*, *e×* to *fbb*, *a×* to *gbb*; descending reversely.

(6) Major sixths reversely.

(7) Major seconds, ascending from *fbb* to *b×*, *cbb* to *e×*; descending reversely.

(8) Minor sevenths reversely.

(9) Minor seconds, ascending from *b×*, *e×*, *a×*, *d×*, *g×*; descending from *fbb*, *cbb*, *gbb*, *dbb*, *abb*.

(10) Major sevenths reversely.

(11) Augmented fourths, ascending from *fbb-g×*, *cbb-d×*, *gbb-a×*, *dbb-e×*, *abb-b×*, *ebb-c×*; descending reversely.

(12) Diminished fifths reversely.

(13) Augmented seconds, ascending from *bb* tones, descending from *×* tones.

(14) Diminished sevenths reversely.

(15) Diminished fourths, ascending from *×* tones and *b#*, descending from *bb* tones and *fb*.

(16) Augmented fifths reversely.

(17) Augmented primes, ascending from $\flat\flat$ tones, descending from \times tones.

(18) Diminished octaves reversely.

(19) Diminished thirds, ascending from \times tones, $b\sharp$, $c\sharp$, and $a\sharp$; descending from $\flat\flat$ tones, $f\flat$, $c\flat$, and $g\flat$.

(20) Augmented sixths reversely.

(21) Diminished seconds, ascending from \times tones, $b\sharp$, $c\sharp$, $a\sharp$, $d\sharp$, and $g\sharp$; descending from $\flat\flat$ tones, $f\flat$, $c\flat$, $g\flat$, $d\flat$, and $a\flat$.

(22) Augmented sevenths reversely.

§ 117. The degrees of the scale are called *diatonic* intervals with reference to their mutual musical relations (§ 50.)

REMARK. Although the Science of Intervals appears sufficiently simple and consistent in the foregoing presentation, (which agrees with musical usage and the logical and historical development of our musical system), to be easily understood, attempts have nevertheless been made to present it in an apparently yet more simple and consistent form. These attempts have gained publicity in the works of a few writers and teachers, to the prejudice of uniformity in musical terminology; we therefore notice them here, to facilitate the comprehension of such works.

One such attempt (A. B. Marx) simplifies the terminology by including among the *major* intervals those here called *perfect*; he terms their diminution by a semitone *minor*, by a whole tone *diminished*; thus the Table of § 110 would assume for all intervals this form:

$\frac{1}{2}$ tone +	augmented
	major
$\frac{1}{2}$ tone —	minor
$\frac{2}{2}$ tones —	diminished.

According to this our *perfect* primes, fourths, fifths, and octaves are called *major*; instead of *diminished* fourth, fifth, and octave we have *minor* fourth, etc. These intervals are called *diminished* only when they are what we term *doubly* diminished.

The other attempt (S. W. Dehn) retains the distinction between major and perfect intervals; but introduces, for the diminution of perfect intervals by a semitone, the designation *false*; while *diminished* is also applied to the contraction of the *perfect* intervals by a whole tone.

$\frac{1}{2}$ tone +	augmented	
	major	perfect
$\frac{1}{2}$ tone —	minor	false
$\frac{3}{2}$ tones —	dimin.	dimin.

Our *diminished* fourths, fifths, and octaves are therefore called *false*; our *doubly* diminished ones are called *diminished*.

VIII.

The Science of Chords.

Chords in General.

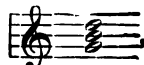
Transposition.—Doubling.—Close and Open Harmony.—Inversion.—Completion

§ 118. A chord, in the broadest sense, is any conjunction (combination) of more than two tones: in a restricted sense, every such combination of from 3 to 5 tones constructed as a succession of thirds, or derivable from any such succession.




for instance, is derivable, by

transposition, from the succession of thirds

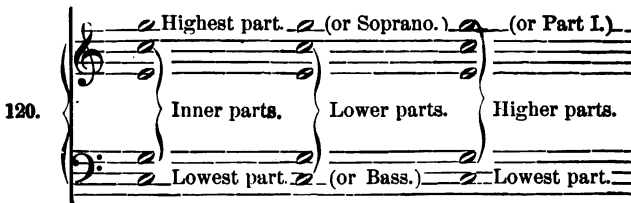


and is therefore a chord in the restricted sense. Such chords will first be treated of here.*

§ 119. All chords are read from the lowest to the highest tone.  is therefore read *dfgb*, not *b g f d*.

§ 120. Chords are divided according to the number of their tones into as many parts, which are counted from the highest tone to the lowest; thus, first part, second part, etc.

The highest part, or Part I, is also called the Soprano; the lowest part, the Bass. The parts lying between these two are called Inner Parts. In their relation to the Soprano, all other parts are called Lower Parts; in relation to the Bass, the rest are called Higher Parts.



The lowest and the highest part are also called outer parts; and the inner parts, middle parts.

(Viewed as the four essentially different human voice-parts, the first part is called Soprano, the second Alto, the third Tenor, the fourth Bass. The two first are performed by women or children, the two last by men. *Mezzo soprano* is a female or child's voice lying deeper than soprano and higher than alto; *Barytone* is a male voice lying deeper than tenor and higher than bass).

§ 121. Every chord, which is constructed of a succession of thirds, is called a fundamental chord. The bass of such a chord is called the fundamental tone.

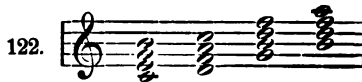
* The employment of chords in musical composition does not belong to elementary instruction, but to a course in practical harmony.

There are three kinds of fundamental chords:

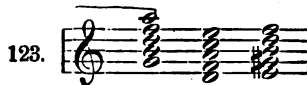
(1) Triads:



(2) Chords of the Seventh:



(3) Chords of the Ninth:



The names of chords under (2) and (3) refer to the intervals formed by their outer parts.

§ 122. Without changing the harmonic significance or name of a chord it may be *transposed*, i. e. the mutual position of the upper parts, *but not* the bass note, may be altered. Thus the chord



may be changed by transposition as follows:

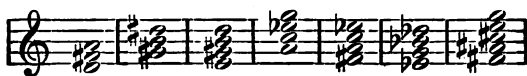




without losing its character as fundamental chord.

The bass remains fixed, but may be transposed to another octave if by so doing it does not lose its place as bass (lowest) tone. Some transpositions of our chord now follow.

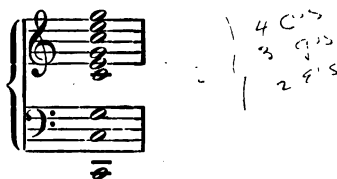


EXERCISE 41. Transpose the parts of the following chords so, that the chords remain fundamental:

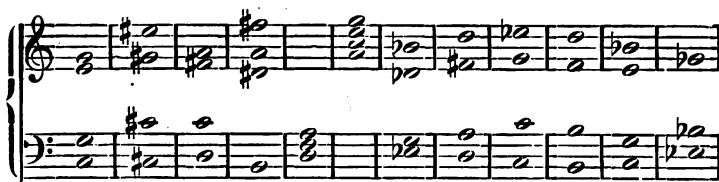


This exercise is to be written out on two staves with  and , likewise played by heart at piano.*

§ 123. Without influencing the name of a chord the number of parts therein can be increased by repetition in a higher or lower octave. But the lowest tone must invariably remain the same, even though in another octave. Such repetition is called **Doubling**. Here the example of a nine-part triad:



EXERCISE 42. Increase the following fundamental chords to eight parts by doubling:



§ 124. When two parts in a chord lie so near together, that no tone belonging to the chord can be doubled between them, they are said to be in *close position*; e. g., all successive parts of the following chords:

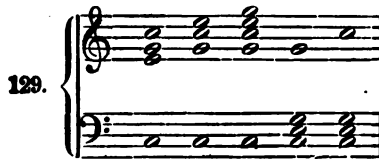


* Notice § 105, note under table. The highest and lowest notes of the chord should not be written out of line.

But, where one or more tones of the chord can be doubled between them, they are in *open position*; e. g., all parts of the following chords:



A chord whose inner parts lie as near as possible to the soprano or to the bass, is said to be in *close position* (close harmony).



A chord between each two successive parts of which one or more tones belonging to it could be doubled, is said to be in *open position* (open harmony).



In many chords we find neither complete close nor open harmony, some parts lying in close, other in open position. This phenomenon is sometimes styled mixed harmony.

EXERCISE 43. Following fundamental chords to be written out in open harmony on two staves:



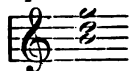
Write the following fundamental chords in open harmony:



§ 125. When the tones of a fundamental chord are so transposed, that a tone from some upper part becomes the bass tone, and the original bass occupies another part, we obtain an inversion of the fundamental chord. *E. g.*, in



g is bass note. Now, if I take instead the *b* of the second part as bass, letting the bass take an upper part, *e. g.*



I obtain an inversion of the fundamental chord *g-b-d*, namely *b-d-g*, or in open harmony:



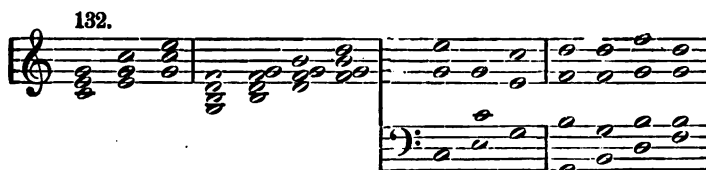
; with doubled notes:



It is clear, that every fundamental chord admits of as many inversions as it has parts above the bass (of course without doubling, as in § 121), for each upper part can be taken once as bass.

The inversions are called *first*, *second*, *third*, etc. Their order is determined by the succession of the tones in the fundamental chord (§ 119). Thus the original Third, when taken as bass, forms the *first* inversion, the original Fifth the *second*, the Seventh the *third*, the Ninth the *fourth*.

Here follow a triad and a chord of the Seventh, with inversions in close and open harmony.



EXERCISE 44. Construct, to the following fundamental chords, the inversions in writing and at piano, both in close and open harmony:



To following inversions construct in like manner the fundamental chords:



§ 126. The fundamental or lowest tone of the fundamental chord (§ 121) also retains this name in the inversions, when set among the upper parts. The lowest tone of an *inversion* is called simply its *bass* (tone).

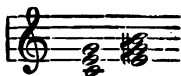
§ 127. **Partial chords** are also met with, in which one or two tones used in forming the above chords are wanting. In mentioning such chords, the *lacking* tone is named, to complete them; thus we call the chord:



a chord of the seventh without the Third.

§ 128. When desired to name a given chord, cross out all doubled notes, reduce to close harmony, name, if an inversion is now obtained, the fundamental chord of the

third, and perfect fifth.



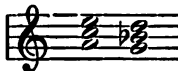
It is called a *major*

triad, because it can be erected on the key-note of the major scale from tones of the latter. In this sense it is also called *fundamental*, or *tonic* triad (Tonic = Key-note), or simply the *common* chord.

EXERCISE 46. Upon which degrees of the major and minor scale can a major triad be erected with tones belonging to the scale?

Name tonic triads of major scales in the Circle of Fifths.—Name major triads on degrees of the chromatic scale.

(b) The Minor Triad consists of fundamental, minor third, and perfect fifth.



It is called a *minor*

triad, because it can be erected on the key-note of the minor scale* from tones of the latter. In this sense it is also called *fundamental* or *tonic* triad, or common chord in minor.

EXERCISE 47. On which degrees of the major and minor scales is the minor triad found?—Name tonic triads of minor keys in Circle of Fifths.—On degrees of chromatic scale.

(c) The Diminished Triad consists of fundamental, minor third, and diminished fifth.



It is found

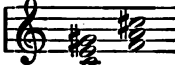
on the seventh degree in major, on the second and seventh in minor, and is named accordingly. E. g.



is the diminished triad of *C*-major or *c*-minor on the seventh degree, or of *a*-minor on the second degree.


* In all references to the Minor Scale the proper or harmonic scale is meant here. (Comp. § 46, p. 40.)

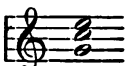
EXERCISE 48. Name diminished triads of major keys in Circle of Fifths.—On the second and seventh degrees of minor keys in the Circle of Fifths.—On chromatic degrees.

(d) The Augmented Triad consists of fundamental, major third, and augmented fifth.  It is found on the third degree in minor.

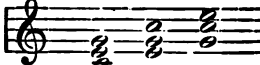
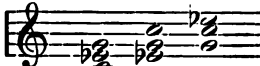
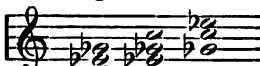
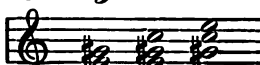
EXERCISE 49. Name augmented triads of minor keys in Circle of Fifths.—On chromatic degrees. Erect the augmented, major, minor, and diminished triads on all degrees of chromatic scale. C e g#, c e g, c e# g, c e# g#; c# e# g x, c# e# g#, c# e g#, c# e g, etc.

Inversions of the Triads.

§ 130. By transposing the tones of the triad so, that the original third is set as bass, we obtain the *first inversion* of the triad, the Chord of the Sixth, so called from its highest interval, the sixth. 

By transposing the tones of a triad so, that the fifth is set as bass, we obtain its *second inversion*, the Chord of the Fourth and Sixth, so called from the intervals formed by its two highest tones with the bass. 

134.

Major Triad and Inversions	
Minor " " "	
Dimin. " " "	
Augm. " " "	

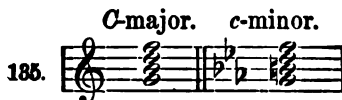
EXERCISE 50. Name and play tonic triads, with their inversions, in major and minor keys of Circle of Fifths.

Diminished triads as above.—The augmented triads as above.—Construct Circle of Fifths of the several inversions.

Chord of the Seventh.

§ 131. That four-part chord consisting of fundamental, third, fifth, and seventh, is named, from its highest interval, Chord of the Seventh. The chief chords of the seventh are as follows:

(a) The Dominant Chord of the Seventh, having fundamental, major third, perfect fifth, and minor seventh; situated on the Fifth (Dominant) in both major and minor; often called simply Chord of the Dominant.



EXERCISE 51. Construct, orally and at piano, Dominant chords of the seventh in major and minor keys of Circle of Fifths.

(b) The Minor Chord of the Seventh has fundamental, minor third, diminished fifth, and minor seventh; situated on the seventh degree in major and the second in minor.




EXERCISE 52. Minor Chords of the Seventh in major and minor as above.

(c) The Diminished Chord of the Seventh has fundamental, minor third, diminished fifth, and diminished seventh; situated on the seventh degree in minor.



EXERCISE 53. Diminished Chords of the Seventh in all minor keys.

§ 132. *Inversions of the 3 Chords of the Seventh.*

Dominant Chord of the Sev.	Minor do.	Diminished do.
138. 		
C-major. c-minor.	C-major. a-minor.	c-minor.

The *first* inversion of every chord of the Seventh is called:

- Chord of the Fifth and Sixth,
second: Chord of the Third and Fourth,
third: Chord of the Second.

All three take their names from the most important intervals, namely, from the two tones which form the Seventh in the fundamental chord.

EXERCISE 54. Construct the three Chords of the Seventh mentioned, with their inversions in all keys in Circle of Fifths.—Circle of Fifths of the several inversions.—Construct Dominant, minor, and diminished Chords of the Seventh on all degrees of chromatic scale, in descending order. Thus g b d f, g b \flat d \flat f, g b \flat d \flat f \flat ; f \sharp a \sharp c \sharp e, f \sharp a c e, f \sharp a c e \flat ; f, etc.

Chords of the Ninth.

§ 133. The Chord of the Ninth has five tones, fundamental, third, fifth, seventh, and ninth. The most important ones are:

- (a) The Major Chord of the Ninth, having fundamental,

major third, perfect fifth, minor seventh, and major ninth; situated on the fifth degree in major.

C-major.



(b) The Minor Chord of the Ninth differs from the above by having a *minor* Ninth. It is situated on the fifth degree in minor.

c-minor.



EXERCISE 55. Construct major chords of the ninth in all major keys.—Minor chords of the ninth in all minor keys.—Major and minor chords of the ninth on all chromatic degrees, then determining the key to which each belongs.

When inverting or transposing this chord the ninth must not be set as a second, for thereby the principle of construction in consecutive thirds would be relinquished.

The mutual inversion of fundamental and ninth to the seventh is likewise generally inadmissible.

Here follow inversions of major and minor chords of the ninth in as close position as possible.



These inversions have no special names. The Ninth of this chord is set regularly in the Soprano.

EXERCISE 56. (I) Construct, in close and open harmony, the three first inversions of all major and minor Chords of the Ninth, with the Ninth in the Soprano.

(II) Name the fundamental chords from which the following common and agreeable Inversions of Chords of the Ninth are derived.



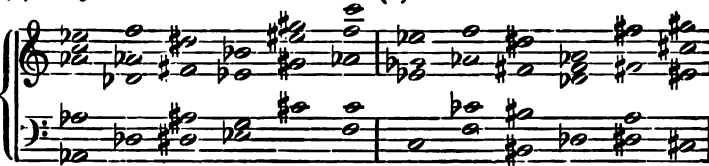
§ 134. A chord of very frequent occurrence is the so-called *augmented chord of the sixth* given below. It consists of a bass note with its major third and augmented sixth, and can be completed to a four-part chord by adding either the *augmented fourth* or the *perfect fifth*.



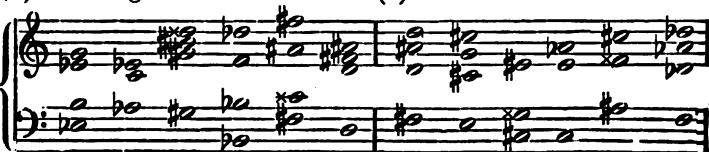
EXERCISE 57. Erect it in these three forms upon all chromatic degrees; most easily on c d♭ d e♭ e f g♭ g a♭ a b♭ b c♭.

Chord-reading. (Comp. § 128.)

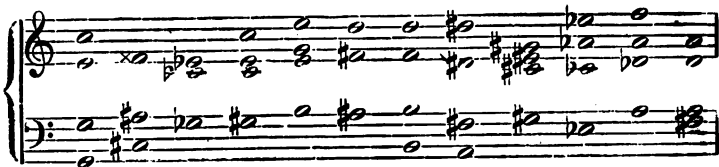
(1) Major and Minor Triads (2) and diminished



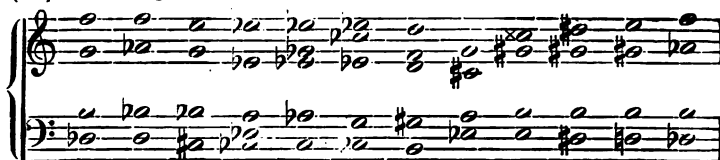
(3) and augmented (4) and Chords of the Sixth



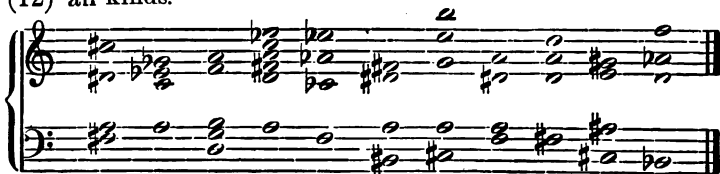
(5) and Chords of the Fourth and Sixth



(11) and augmented Chords of the Sixth



(12) all kinds.



Tones foreign to a Harmony.

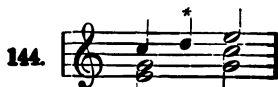
§ 135. Tones sounding together with a chord without belonging to it are called *foreign* to the harmony. In contradistinction to these, the tones belonging to a chord are called *harmonic* or *chord-tones*.

EXERCISE 58. I. Designate the foreign tones in the following example.



The following characterizations of different kinds of foreign tones are applicable only in simple cases. Where they are insufficient, employ the general term—foreign tones.

Foreign tones are called *Passing-notes* where they progress stepwise from one chord-tone to another on weak counts.





Foreign tones are called *Suspensions*,

originally, when they belong to the preceding chord,
and arise by delayed progression:



occasionally, when they enter on a relatively *strong* or
weak beat either by a skip or after a pause, and
are followed in the same part (usually stepwise) by a
chord-tone:





Foreign tones are called *Anticipations*, when they belong to the next-following chord:



The various kinds of inharmonic tones cannot be treated of before Practical Harmony, because for their comprehension the pupil himself must do practical work.

EXERCISE 58. II. Transpose Examples 144, 146, and 148 into all keys of the Circle of Fifths.

Figuration.—Organ-point.

§ 136. The exhibition of a chord by striking its tones successively is called the *Arpeggio*, or *Broken Chord*.



Such an exhibition, applied to entire compositions or parts of the same, is called *harmonic figuration*.



The part presented above is the harmonic figuration of the following chords:



Harmonic figuration may be enriched by foreign tones:



EXERCISE 58. III. Figurate the C-major triad, first without, and then with, foreign tones.

Chords containing foreign tones may also be figured.

Given Chords:



Figuration of the same:



EXERCISE 58. IV. Construct other figurations of the same given chords.

§ 137. An *Organ-point* (also *Pedal-point*, or *Pedal*) is a tone sustained by one part, during which the chords (and sometimes the keys) change in the other parts.



For naming the chords during an organ-point the latter is not considered. Instead of a sustained tone there is sometimes found a repeated, or rhythmically figured, tone.



The organ-point, too, unites at times with foreign tones.

EXERCISE 58. V. Point out Organ-points In classic compositions.

By aid of the foregoing the pupil will be enabled to analyze musical compositions harmonically, *i. e.* to determine the chords occurring, the foreign tones connected with them, the harmonic figurations, and the organ-points.

The analysis begins with the first two preludes in Bach's Well-tempered Clavichord. The names of the chords, and their keys, are to be noted **between** the staves, foreign tones **above** the same, and the inversions in Arabic figures **below** the bass notes. Indicate ("figure") chord of the sixth by 6, chord of fourth and sixth by $\frac{4}{6}$, chord of fifth and sixth by $\frac{5}{6}$, chord of third and fourth by $\frac{3}{4}$, chord of the second by 2. Degrees of the scale are distinguished, as fundamentals of chords, by Roman figures, but can at present be passed over in the analysis.—Major triads are abbrevi-

ated exclusively by capitals, minor triads by small letters. *C* means *C*-major chord or key; *c* means *c*-minor chord or key. The organ-point is indicated by a capital *O* under the bass note.

Chords which, like the augmented chord of the sixth, belong to no key (e. g., the triad *c# e gb*, the chord of the seventh *c# e gb bb*, the chord of the ninth *g b d# f ab*) are to be designated simply as triads, or chords of the seventh or ninth; or as *altered* chords formed by chromatic variation.

View of the 58 Exercises.*

(1) Write successions of root-names, upwards and downwards, beginning at will with any root-name, and progressing to its next repetition.—Write successions of root-names, skipping every other root-name upward or downward, till reaching the one begun with.—Write similar successions, skipping 2, 3, 4, or 5 root-names.

(2) Note-reading.

(3) Read notes of determined value.

(4) Write notes of determined value.

(5) Write rests of determined value.

(6) Read notes with chromatic signs.

(7) Write, play, and designate by root-names notes having double chromatic signs.

(8) Form semitones above and below to root-tones, to sharp and flat tones, to double-sharp and double-flat tones.—Write each root-tone and its derivatives formed by chromatic signs.

* This View of the Exercises is intended chiefly for the direction of those who, having already gained some knowledge of the subject, merely desire to complete it. The headings are at times condensed; the principal, closing exercises, are marked by italics.

(9) Form the enharmonic changes, (1) to root-tones, sharps and flat tones, double-sharp and double-flat tones; (2) of the five black keys of piano with ♯ and ♭ tones.

(10) Raise by half a tone sharpened, flatted, and double-flatted tones. Lower by half a tone sharpened, flatted, and double-sharpened tones. Raise by a whole tone flatted and double-flatted tones. Lower by a whole tone sharpened and double-sharpened tones.

(11) Diatonic Semitones upwards and downwards. Whole tones ditto. Chromatic Semitones.

(12) Construct major scales to given key-notes.

(13) Write signatures of all keys.

(14) *The 15 major keys, their order and signatures.*

(15) Construct harmonic minor scales to given key-notes.

(16) Order of minor scales.

(17) Relative scale to any given major or minor scale.

(18) Order of relative scales.

(19) Construct harmonic minor scales to the relative major scales.

(20) *Learn harmonic minor scales by heart.*

(21) Construct melodic minor scales.

(22) Construct, to unusual key-notes, major scales and their relative harmonic and melodic minor scales.

(23) Auxiliary terms and terminations.

(24) Strong and weak beats in the commonest kinds of measure.—Accentuation of given notes in various kinds of measure.—Naming measures from note-values.

(25) *Formation of rhythms in various measures.*

(26) To name given intervals.

(27) To form intervals above and below.

(28) To augment and diminish intervals by a semitone.

(29) To augment and diminish intervals by a whole tone.

(30) Intervals of the major scale.

- (31) Determination of given major and perfect intervals.
 - (32) Determination of given major and minor intervals.
 - (33) Determination of given major, perfect, minor and diminished intervals.
 - (34) Determination of given major, perfect, minor and augmented intervals.
 - (35) Continuation of foregoing.
 - (36) Form, to key-notes of major scales, the perfect, major, minor, augmented, and diminished intervals above; to root-tones, and *f*♯ and *b*♭, the same below.
 - (37) Determine by transposition given intervals, whose lower tone is not the key-note of a diatonic scale.
 - (38) *Construct to every root-tone, sharp tone, and flat tone, every interval above and below.*
 - (39) Intervals of the minor scale.
 - (40) 1. Construct, according to their width in whole and half-tones, intervals above and below, and determine their key.—2. Genera of the min. 3, p. 4, p. 5, maj. 6, maj. 7, and p. 8.—3. *Construct series of tones separated from each other by a fixed interval.*
-

- (41) To transpose parts of fundamental chords so, that the latter remain fundamental.
- (42) Increase fundamental chords to eight parts by doubling.
- (43) Write out fundamental chords given in close harmony into open harmony, and *vice versa*.
- (44) Construct inversions to given fundamental chords.—Construct fundamental chords from given intervals.
- (45) Complete given partial chords.
- (46) Upon which degrees of the major and minor scale can a major triad be erected with tones belonging to the same?—Name tonic triads of major scales in the Circle of Fifths.—Name major triads on degrees of the chromatic scale.

(47) On which degrees of the major and minor scales is the minor triad found?—Name tonic triads of minor keys in Circle of Fifths.—On degrees of chromatic scale.

(48) Diminished triads of all major keys in Circle of Fifths.—Of minor keys on the second and seventh degree.—Of all chromatic degrees.

(49) Name augmented triads of all minor keys in Circle of Fifths.—Of all chromatic degrees.—Form augmented, major, minor and diminished triads on all degrees of chromatic scale.

(50) Name and play tonic triads of all major and minor keys in Circle of Fifths, with inversions.—Ditto diminished triads of all chromatic degrees, with inversions.—Ditto augmented triads of all chromatic degrees.—Construct Circle of Fifths of the several inversions.

(51) Construct, orally and at piano, Dominant chords of the seventh in major and minor keys of the Circle of Fifths.

(52) Minor chords of the seventh in major and minor.

(53) Diminished chords of the seventh in all minor keys.

(54) The three chords of the seventh mentioned, with inversions in all keys.—Circle of Fifths of the several inversions.—Dominant, minor, and diminished chords of the seventh on all degrees of chromatic scale, descending.

(55) Construct major chords of the ninth in all major keys.—Minor chords of the ninth in all minor keys.—Major and minor chords of the ninth on all chromatic degrees, then determining their key.

(56) Construct, in close and open harmony, the three first inversions of all major and minor chords of the ninth, without inverting the ninth to a seventh.—Name the fundamental chords from which given common and agreeable inversions of chords of the ninth are derived.

(57) Construct augmented chord of the sixth on all chromatic degrees.—*Chord-reading.*

(58) Designation of foreign tones.—*Harmonic Analysis.*

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